DEC 11 1933

PAPER TRADE JOURNAL

Vol. XCVII DECEMBER 7, 1933 No. 23

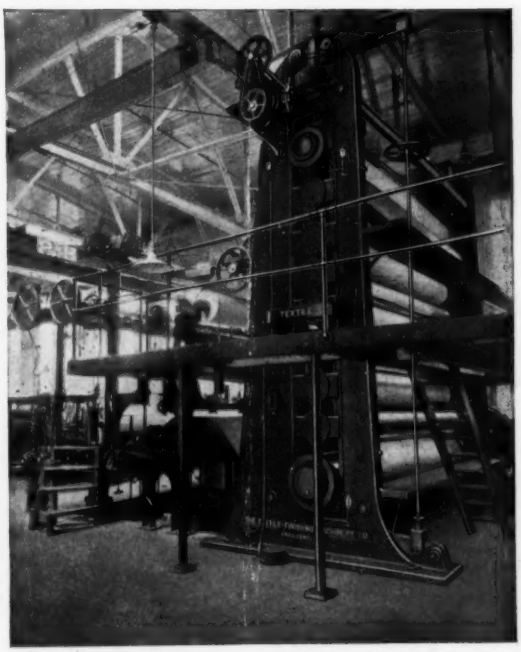
Textile's

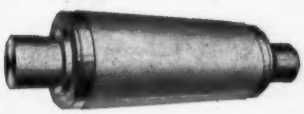
SUPER CALENDERS

FRICTION CALENDERS

EMBOSSING CALENDERS

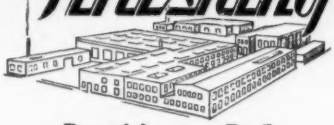
COTTON AND PAPER ROLLS





ROLLS REFILLED AND REFINISHED REGARDLESS OF SIZE AND MANUFACTURE

The Textile Finishing Machinery Co.



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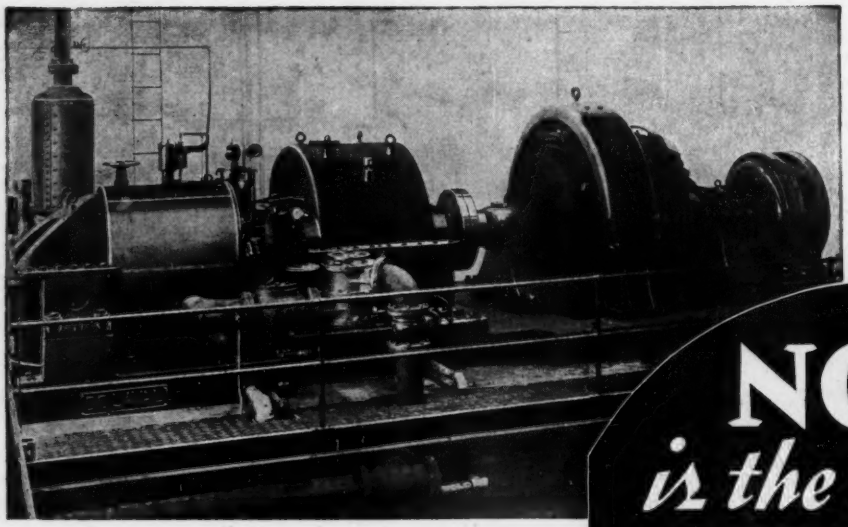

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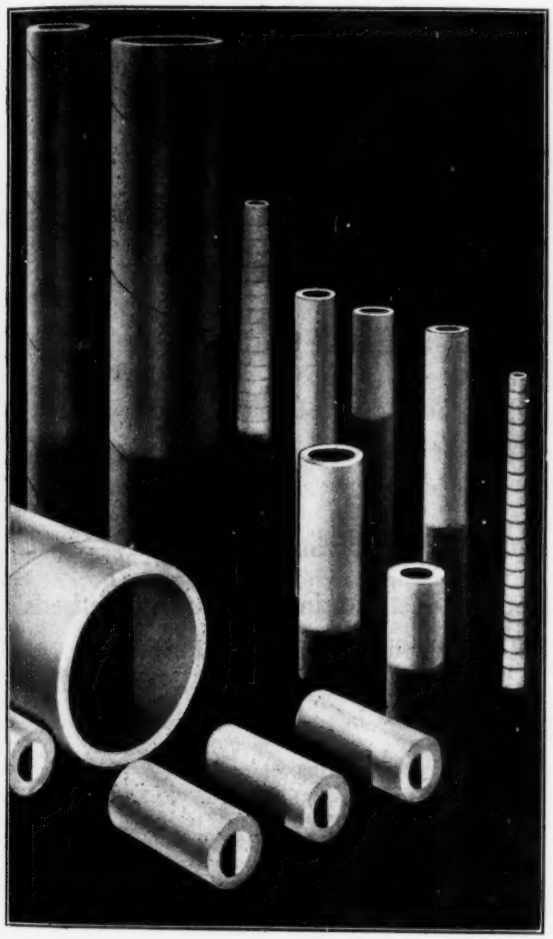

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PAPER TRADE JOURNAL

ESTABLISHED 1872

SIXTY-SECOND YEAR

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

PAPER

Vol. XCVII, No. 23 Thursday, December 7, 1933

Chemical Exposition of Absorbing Interest

More Than Two Hundred Exhibitors Display Array of Products at Fourteenth Exposition of Chemical Industries, Held in Grand Central Palace, New York—Show Illustrates Wonderful Strides Made in Chemical Discovery, Engineering and Improvement Within Last Few Years—New Synthetic Substances and Plastics Shown

An industrial wonderland, embracing the profound magic of chemistry and chemical engineering in its many phases, and its application to all industry, opened on Monday at the Grand Central Palace, New York. This Fourteenth Exposition of Chemical Industries, sponsored by and participated in by many of the leading scientists of the country, is a truly marvelous aggregation, illustrating what splendid strides have been made within the last few years. Not only have strides been made in the matter of chemical discovery, engineering and improvement, but in the almost universal application of new inventions to our every-day life. Probably no better revelation of what a fast moving world we live in could be offered. More than two hundred exhibitors display an astounding array of products and processes, services, etc. The show will be open until Saturday, when the doors will close at 6 p. m.

Although known as the Exposition of Chemical Industries, the visitor sees comparatively few "chemicals." The real show is in the hundreds of processes, methods and demonstrations of converting raw materials into finished products and by-products, and then turning these by-products into still other things, useful or ornamental. New synthetic substances and plastics in great number appeal to the imagination—things like synthetic rubber, such as Duprene; synthetic camphor; Freon, a new refrigerant; artificial leather, which is self-shining and requires no polishing either at the factory or in service, is in itself a marvel. Surprising improvements in such prosaic matters as soap manufacture; rayon made by new processes; synthetic resins put to all sorts of new uses, such as substitutes for wood and metal wall panels, doors, floor tiles, translucent window panes; cellulose in new forms including non-shatterable glass which contains no real glass, are only a few of the marvels that might be mentioned.

The influence of hard times on this wonder-industry is revealed in the section of the show arranged by the American Chemical Society, dubbed "Children of Depression." Seven hundred or more new items, all developed since 1930, were submitted for this display, and about 100 of them selected to illustrate the surprising progress made in various fields.

Naturally enough, the elements which are close to Repeal attract much attention. New methods adaptable to distilling and brewing; synthetic aging of liquors, etc., are of much interest. In this field, of course, much of the machinery and handling equipment is too large to be displayed, except in miniature models, some of which are offered; also modern testing apparatus.

The application of chemical engineering to pure food and health problems covers a vast, important subject, and a number of exhibitors have displays appertaining to these. The modern handling of sewage, water supply, soot, air conditioning, fire-prevention, etc., has brought out many new and scientific developments. Of particular interest to the paper industry are the following exhibits:

American Sheet & Tin Plate Co.

Products of the American Sheet and Tin Plate Company, of Pittsburgh, Pa., are attractively displayed at the large booth of the United States Steel Corporation, of which it is a subsidiary. American stainless and heat resisting alloy steel sheets and light plates are well known in the paper industry. The company manufacturers a full line of American Black Sheets, Keystone Rust Resisting Copper Steel Sheets, Apollo Best Bloom Galvanized Sheets, Heavy Coated Galvanized Sheets, Galvannealed Sheets, Formed Roofing and Siding Products, Automobile Sheets, Special Sheets, Tin and Terne Plates, etc.

Bausch & Lomb Optical Co.

The remarkable analytical possibilities of optical instruments is graphically demonstrated in the Bausch and Lomb exhibit. The exhibit is grouped according to analytical methods, with samples and descriptive matter to illustrate the points involved.

The first group shows many analyses possible with the microscope. Included are such interesting new instruments as the Centrifuge Microscope for the examination of specimens under the centrifugal pressure created by 10,000 r.p.m. The rapidly whirling specimens appear stationary. The Slit Ultra Microscope for the examination of colloidal solution and the latest in polarizing microscopes is shown. Dark field illuminators are a feature of this group.

The second group consists of low power microscopes and magnifiers. Binocular microscopes that give a three dimensional steroscopic effect are a feature.

Photomicrography and microprojectors of many types are on display. As the most satisfactory method of preserving a permanent record of Microscopic observations, photomicrography has become increasingly important.

(Continued on page 26)

Canadian Views on Southern Pine News Print

Acknowledging Paper May be Made Perfectly Well From White Pine, Robert P. Kernan, President of Donnacona Paper Co., Believes North American Producers Need Have No Fear From Competition—States Reasons for This Attitude.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., December 4, 1933—Robert P. Kernan, president of the Donnacona Paper Company, who has given careful study to the experiments in the production of news print from southern pine, has given out a statement in which he says that if Canadian news print producers take advantage of factors specially favorable to the industry here they need have no fear that they will suffer from competition of paper from southern pine. He gives clear cut reasons for this attitude.

"There are four main factors to be taken into account in the building up of the news print industry," Mr. Kernan said. "They are power, raw material, labor and location in respect to markets."

Taking the four items in order, and reviewing in each case the situation in Canada and the United States, he said:

"Power is a very big item. If my information is correct, power would cost a great deal more in the south, than here. I believe that is probably true, because there is a demand in every direction for power down there—from municipalities, all sorts of industries, etc. Power could not be manufactured and sold down there in wholesale quantities, as it can be and is here.

"As for raw material, I understand that paper from white pine must be made from wood fifteen years old, otherwise there is too much resin in it. According to my information, they get about one cord an acre of regrowth in fifteen years. That means that to manufacture 1,000,000 or 1,500,000 tons of news print—which is about all that is manufactured in the United States at present—they would have to cut over a tremendous territory, 1,500,000 or 2,000,000 acres, which does not look very practicable to me.

"As far as labor is concerned they would be at an advantage, because of living conditions down there. The workers have not the problems of heating, etc., which we have to face in this colder climate, and labor would probably be cheaper," he admitted. "Then there is the question of transportation. To rail points—the large centers in the east, northeast and middle west—it is about an even thing, as far as distance is concerned. As for the eastern centers—New York, Boston, Philadelphia—we probably equal them if we are not better from the point of view of rail transportation," he said. "As for water transportation in the summer it is quite good while through the Great Lakes in the Middle West we would have a big advantage.

"The paper can be made perfectly well from white pine. It can be made from straw, corn-cobs, and all sorts of things," he pointed out. "But I cannot see that they can cut enough wood and get enough power to interfere with the Canadian news print industry.

Industry Active in New Brunswick

A despatch from Saint John, N. B., states that woods and mill operations of pulp and paper organizations in New Brunswick indicate confidence that the more active conditions which have prevailed since the beginning of last summer will continue in evidence.

The Fraser Companies, Ltd., report that approximately 5,000 men will be employed in the woods this winter and that the amount of pulpwood obtained will be enough to keep the Athol sulphite mill and the Edmundston sulphite and groundwood mill in operation through 1934. The company will also cut for sawmills at half a dozen other provincial points.

The New Brunswick International Paper Company is employing, at the present time, 705 men on full time and the payroll for October this year was more than twice as large as that for the same month last year. Production of the mill from May to October, inclusive, this year, has been 63,000 tons compared with 67,000 tons from May to December last year, with the general business outlook bright.

An improvement is noted in the operations of the Bathurst Power and Paper Company since September 1. The kraft and board and sulphite departments have been running at full capacity and news print has also showed up well.

The Port Royal Pulp and Paper Company at Saint John which purchased the plant of the former Nashwaak Company and reopened it a year ago, has now 200 men on its weekly payroll and, recently, granted an increase in wages. The company has installed two oil tanks with a total capacity of 5,000,000 gallons.

The St. George pulp mill was reopened during the summer and is employing 100 hands.

Price Brothers Make Good Showing

An unexpected favorable announcement has been made concerning the operations of Price Bros. & Co., Ltd., during the period that the company has been in bankruptcy, from March 31 of this year to the present. This is to the effect that the operations have been sufficiently profitable to show normal bond interest practically earned.

At the same time, it is learned the company's liquid position has been improved. Bank loans have been reduced by close to 3 per cent. These, at the time of the bankruptcy were approximately $3,590,765.

This favorable showing has revived hopes that the company will be rehabilitated without sacrifice of the junior interests. While negotiations have been proceeding for the formation of a new offer to be made to the bondholders by the preferred shareholders and others with an interest in the company, nothing definite has been arranged.

Preparations are being made to renew the fight for control of the vast news print and lumber enterprise, despite the fact that the Bondholders Protective Committee has entered into an agreement with Bowater's Paper Mills.

Paper Box Plant's Safety Record

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, December 4, 1933—The Sidney Paper Box and Novelty Company, of Sidney, Ohio, north of Dayton, has established an unusual record during the past four years, having operated over that period with no accidents in its plant.

George J. Gagoudy, president of the company, has just received a congratulatory letter from Thomas P. Kearns, formerly of this city, now the head of the Industrial Commission of Ohio.

Chicago Paper Market Displays Strong Trend

News Print and Ground Wood Paper Manufacturers Anticipate Helpful Stabilization Under Recovery Code—Demand for Various Standard Grades of Fine Paper Broadens—Tissues Show Seasonal Improvement—Kraft Wrapping Paper Remains Firm

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., December 4, 1933—Demand in the Chicago paper market has been comparatively good during the past week. Naturally, prices responded to the provisions of the code of fair practices for the paper industry. Locally, there is far less confusion about the markets as there is concerning interpretations of the workings of the code affecting hours of labor, wages, etc. Mill perplexities of course have their effect on representatives here. Various associations in Chicago long ago had fully discussed the possibilities of price changes due to code provisions and this prevented any great amount of excitement.

Meanwhile representatives of many lines that have been in the doldrums see a great deal of hope in the new deal as it affects them. News print and ground wood representatives see hope of a stabilization that will be helpful. This chance of improvement when coupled with actual betterment of demand is going to aid considerably. Fine papers broadened out slightly during the week, size of orders booked being larger, and there is a feeling that improvement will be gradual but continuous from now on. Tissues felt a seasonal improvement. The board market went along about as usual—which is a fairly active state—while books and covers were reported better. Some changes were noted in the waste market. Krafts and other coarse papers remained firm during the week, representatives here hoping that the code covering their activities will closely follow the master code of the industry. Some confusion is already resulting from an overlapping of the two codes, according to reports.

Chicago Paper Association Meets

The first meeting of the new fiscal year for the Chicago Paper Association was held at the Blackstone Hotel, Chicago last Tuesday evening, November 28. William Chukerman, of J. Chukerman Sons, presided. Much of the discussion centered around the code covering the coarse paper industry. The paper code, now signed, covers many lines which are featured by coarse paper houses, including kraft. Thus many difficulties are arising which, however, will probably be eliminated when all codes covering the entire industry are signed. D. F. Peck, Hanchett Paper Company, held some of the spotlight during the evening meeting, with a discussion of the quality of dry finish butcher papers. It is reported that Mr. Peck, and others, are planning to establish a single line—a commercial grade—of butcher paper to replace the three or four grades now being sold. M. A. McNulty, newly elected president of the association, confirmed the statement that the various commodity committee chairman would be retained as during the past year and that the chairmen of the other important committees, including membership, mill relations and publicity would be announced at the December 12 meeting of the association.

News of the Trade

Allen & Co. paper merchants, have leased for a term of years the second floor of the Occidental Building at 318 West Washington street, Chicago. The building contains 7200 square feet of floor space. According to Bert Allen, president, this is the first time in 27 years that the firm has moved its offices. The firm, formerly at 205 West Monroe street, specializes in bonds, ledgers and light weight specialities.

William W. Fox, Pilcher, Hamilton & Daily Company, has been elected a director of the Junior Association of Commerce, Chicago, for the year 1934. Mr. Fox has long been active in Junior Association work both locally and in national affairs. He is also the association representative in the Illinois Relations Committee of the Chicago Association of Chicago.

The second in a series of mailings from the Bryant Paper Company reached Chicago offices during the week. A letter signed by George B. McAlister, advertising manager, calls attention to the valuable services that can be performed by paper in its most attractive form. "Coated papers," says the letter "are conceded to render service in the highest possible degree when photographic illustrations are the dominating feature of the message." The letter also introduced Sunray, a popular high finish coated, 70 substance paper and unusually suitable for publication purposes. Sunrays' used in the development of travel literature.

Latest reports on business conditions as issued for the seventh federal reserve district show an improvement in earnings for the paper industry but a decline in the number of wage earners. The 1.5 per cent improvement in earnings as of October 15 compared to September 15 is a much better showing than the 3.3 decline for the ten manufacturing groups reporting. The 332 paper and printing firms reporting showed, however, a 0.5 per cent decline in number of wage earners on October 15 as compared to September 15. A total of 50,215 wage earners were reported on October 15.

The directors of the Paper Foundation held a meeting during the past week in the Conway Building offices of the Foundation, with Phil Howard, the managing director, and Mr. Miskella, who handled many of the details during the last weeks of the Fair, presiding. Those present, all from Chicago, decided to call a final meeting of the board to be held in Chicago on December 12. At that time important announcements will be made concerning the continuation of Foundation efforts or, if so decided, the abandonment of any program designed to carry on into 1934.

Association Leases Larger Quarters

Due to the fact that larger quarters are required for the augmented staff needed to administer the Code of Fair Competition for the Paper and Pulp Industry, the American Paper and Pulp Association, the official "Paper Industry Authority" has leased considerable space in the Chanin Building, 122 East 42nd street, New York, and will remove to the new premises on January 1.

The American Paper and Pulp Association will occupy the 38th floor. The Import Committee of the American Paper industry, the Book Paper Manufacturers Association and the Tissue Paper Manufacturers Association will be housed on the 37th floor; while the United States Pulp Producers Association will remove to the 39th floor of the building.

Activities of Fox River Valley Paper Mills

Consolidated Water Power & Paper Co. Increases Wages of Approximately One Thousand Employees—Six Hour Shift Adopted Some Time Since—Other Wisconsin Paper Manufacturers Revise Schedules and Wages to Conform to Recovery Code for Industry

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., December 4, 1933—Wages for hourly workers affecting approximately 1,000 employees were increased four per cent on November 27 by the Consolidated Water Power and Paper Company at all of its four divisions at Wisconsin Rapids, Biron, Stevens Point and Appleton, Wis. The basic rate formerly was 36½ cents per hour but will now be 38 cents. The increase was granted to conform to the letter and spirit of the code for the paper industry which went into effect on the above date. The six-hour shift was adopted by the company some time ago so as to give employment to a large number of additional workers.

The union Bag and Paper Company's Division at Kaukauna, Wis., has been placed on a 40-hour week basis to conform to the codes. Changes have been going on for about two months in order to revamp the organization for smooth operation on the shorter schedule. Fifteen additional workers have been added, according to Rudolph Jacoby, mill manager. The present working force is 90 persons.

Patten Paper Company, Ltd., has completed its changes in hours and wage scales to meet the code. The Kaukauna, Wis., Division was changed over August 1 and the Appleton, Wis., Division, September 1.

The Fox River Paper Company and the Riverside Paper Corporation, Appleton, Wis., have both revised their schedules so the shorter work week is in effect. No wage changes were necessary at the Riverside mill, because the scales had never been reduced, company officials declared. The minimum wage of 38 cents an hour and the 40-hour week are in effect generally in Wisconsin mills now.

New Cedars Dam Nearly Completed

According to present estimates, the new Cedars Dam on the Fox River adjacent to the Kimberly-Clark Corporation's mill at Kimberly, Wis., will be completed within about three weeks by the Lemke Construction Company, of Kaukauna, Wis. The project is a $60,000 contract job for the U. S. Government and has been in progress all summer.

The new dam is entirely of concrete, with steel sluice gates. It is 654 feet long, including 263 feet of concrete spillway. Seven steel sluice gates extend for a length of 180 feet.

With navigation on the Fox River officially closed, work will be resumed immediately on a new government lock at Rapid Croche, below Kaukauna, Wis. Construction of a coffer dam has already been started. The work was started last winter and probably will be completed before navigation resumes in the spring.

State Reforestation Advances

Reforestation in Wisconsin was advanced to the extent of 13,662,900 trees planted on 15,181 acres up to November 1 by units of the Civilian Conservation Corps, according to a report of E. W. Tinker, Federal forester for the Lake States district. In the entire Federal forest area of Wisconsin, Michigan and Minnesota, 42,372,000 trees were planted on 47,080 acres. This is double the acreage the forest service has ever planted in one year in the entire country. Ground has been prepared for the planting of 10,500,000 trees next spring.

Forest fire control has been advanced by the building of 177 miles of telephone line, clearing of 61 miles of firebreak, removing hazardous underbrush from 2,224 acres, constructing of 177 miles of truck trails, and erection of 13 bridges and 28 buildings. The CCC youths spent 34,995 man days fighting forest fires in Wisconsin during the last season.

News of the Industry

Consumer rates for power furnished by the Consolidated Water Power and Paper Company to the city of Wisconsin Rapids through the municipal utility of that city have been ordered reduced a total of $10,300 annually by the Wisconsin Public Service Commission. It was stated that the utility, with a book value of $346,000 was making excessive profits. Reductions go into effect December 15.

Shipments of structural steel approximating 200 tons have been received by Appleton Woolen Mills to be used on its new four-story factory and warehouse addition. Erection of the framework will be started at once. This work is being done by the Fox River Boiler Works, Appleton, Wis.

In the annual bowling tournament of the four divisions of the Marathon Paper Mills Company, held a week ago at Menasha, Wis., the Menasha teams won both cups, one for high scores, and the other a booster trophy. Among the women bowlers, the teams from Ashland, Wis., mill ranked first. The other mills are at Rothschild and Wausau, Wis., and also had large numbers present.

J. W. Lemley, who built the first paper mill at Wisconsin Rapids, Wis., died last week at that city at the age of 81. The city was known as Centralia at that time, and the paper industry was just getting under way in the Wisconsin River Valley. The first mill, built by Mr. Lemley and his father, Charles Lemley, was a pulp plant known as the Mack and Spencer mill. Mr. Lemley came to the city 75 years ago via stage coach from New Lisbon, Wis. He and Mrs. Lemley would have been married 59 years next January.

Empire State Reforestation

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., December 4, 1933—Figures compiled by the Conservation Department shows that New York led all other states in the total number of trees distributed during 1932. Michigan was second with over 9,600,000 and Pennsylvania third with over 8,175,000 trees planted. The report discloses that a total of 88,463,883 trees were distributed in the various states. In the planting of trees on State land New York accomplished more than three times the figures of its nearest competitor, which was Michigan. Wisconsin ranked third. During 1932 there were about 24,461,200 trees planted on lands in this state because of the extensive reforesting program sponsored by the government. Tree stock planted on private land other than farm lands in this state during that year was more than ten times the amount of the nearest competing states. The total for this state was 12,508,800 trees.

Ontario Paper Mills Only Moderately Active

While Demand for Book Papers Rules Fairly Satisfactory, Orders are Too Small for Profitable Operations—Bonds, Ledgers and Writings Comparatively Quiet—Light Weight Paper Production Well Sustained—Converters Fairly Busy

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., December 4, 1933—The distributing end of the paper industry in Ontario has reached the quietest month of the year. The month just closed produced a fair amount of business in fine paper lines, November showing up somewhat better than in the same period of 1932. The year closes, however, with a disposition on the part of consumers to use the cheaper grades of paper and to buy in small quantities—a condition that has existed pretty much for twelve months. There has been little or no improvement in the printing and allied industries and requisitions for fine papers from this source continue light.

The coarse paper market is still quiet, although there is a better feeling and more inquiries just now than there have been for some time. One coarse paper merchant said this: "Improvement is here and I am inclined to think it has come to stay. But relapses are to be expected and the journey back to prosperity is not going to be rapid. Our main difficulty is that there is practically no laying in of stocks. The converting trade in coarse paper lines, such as the paper bag and gumming and waxing concerns, was fairly busy last month, but even at that buying was almost entirely from hand to mouth. Strikes in Ontario, too, have been affecting the movement of coarse papers adversely."

In the mill trade the demand for book papers is comparatively good, but in all lines orders are too small to make for prosperous operating by the manufacturing plants which are compelled to make small runs. Mills manufacturing bonds, ledgers and writings had a fair month during November, but the present month has opened quietly. The operations of the light weight paper manufacturers are on quite a satisfactory basis and business with them leaves little to complain of.

In Paper Business at Eighty

One of the oldest employees in the paper trade in Ontario today, Miss Elizabeth Mason, retired last week from the service of the Wilson-Munroe Paper Company, Toronto, the day before her 81st birthday. Miss Mason was born in London, England, and came to Canada in 1849, settling in Toronto with her parents. She worked first with the Hunter-Rose Company in the bindery, later going to William Warwick & Sons and afterwards to the Murray Printing Company, printers and book binders, having become fore-woman of the bindery girls. She then continued in the same position with the Wilson-Munroe Paper Company. Miss Mason has been in the employ of the latter firm from 1872 to the present time. She enjoys good health and has been associated with the trade continuously for 64 years. Just before leaving the office a few days ago Miss Mason was presented with an armchair and reading lamp by E. S. Munroe on behalf of the staff.

Three New Contracts for Hydro Power

Reiterating his conviction that the Abitibi Power Development would be on a self-sustaining basis within a year, the Hon. J. R. Cooke, chairman of the Hydro-Electric Power Commission for Ontario, announced still another power contract, this one with the Abitibi Power and Paper Company at Iroquois Falls. This new contract, the third Abitibi power contract to be announced within the past few weeks, is to bring to the Hydro Commission between $50,000 and $100,000 a year. The Commission is negotiating for other contracts which will be completed before the end of the year, it was stated.

Hydro power will replace coal as a means of making steam at the Interlake Tissue Mills, Merritton, and the Provincial Paper Mills at Thorold, Ont., starting early in January of next year, officials of the two mills have announced. This move follows one made by the Ontario Paper Company nearly a year ago, and which, it is reported, has proved successful. Canadian coal firms will not be affected by the change as the coal was purchased in the United States. The Interlake Company used about 6,000 tons annually, while Provincial used 7,500 tons yearly. Eight thousand kilowatt units will be installed in both plants, but in the case of the Merritton mill only 5,000 will be used at the start, the rest being held in case of expansion. Provincial officials were unable to say just how much power would be used at first. The boilers are now being built.

Notes and Jottings of The Trade

The Interlake Tissue Mills Company, Ltd., Thorold, Ont., have issued a book which is being sold through the company's sales force and by the larger merchants to those who are interested in decorative use of crepe paper in craftsmanship. Interlake Superfine Crepe paper, from the tree to the finished product, is made in Canada, and the book gives an admirable notion of its varied and attractive uses.

Representatives of the various paper houses in Vancouver, B. C., together with representatives of the city council and the Vancouver Board of Trade, were recently the guests of the Bartram Paper Products Company on a tour of inspection of their new paper bag plant at 33 Woodlawn Drive, Vancouver.

A folder, printed on Oxford English Finish, was sent out by Provincial Paper, Ltd., Toronto, together with the regular blotter. On the blotter the subject discussed is "China Clay" and an illustration shows a load of this material coming in by ship from England, where it is mined, washed and processed.

Appointment of Lorne D. Graham, formerly Vancouver manager of the company, to the position of supervising manager of the western offices from Winnipeg to Vancouver, has been announced by the Barber-Ellis Company, Toronto. Mr. Graham opened the Vancouver branch of the firm in 1912.

W. G. Scott, formerly of the Cornwall plant of the Howard Smith Paper Mills, Ltd., has been transferred to the head office of the company in Montreal.

H. G. Schanche, of the Abitibi Power and Paper Company, Ltd., has returned to Toronto from Iroquois Falls and will direct the woods operations of the company from the head office of the concern on University Avenue, Toronto.

The timber and pulpwood operators of the Thunder Bay district have formed an association largely for the purpose of handling labor disputes. Don Clark is the president and C. W. Cox vice-president, with W. H. Russell as secretary.

Philadelphia Paper Market Conditions Spotty

Volume of Both Fine and Coarse Paper Business Transacted During Past Week, However, Compared Favorably With Preceding Week's Trading—Demand for Various Grades of Paper Stock Slightly Better—Success of Credit Program Attested

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., December 4, 1933—Though both of the great major branches of the paper business—the fine and the coarse—found in the opening days of December no large improvement from the closing week of November, they unquestionably are entering into the good feeling of the last month of the year in a holiday spirit. This is based, not so much upon the immediate betterment in the volume of business as upon the very decidedly improved tone of the business which is being done. And those who are disposed to contrast the December of 1933 with that of December, 1932 express the opinion that the gain has been a very substantial one. The immediate cause of the very much improved feeling is based on the reports received at the meeting last week of the Credit Men of all the fine paper houses in Philadelphia particularly engaged at this time in the enforcement of the recently adopted regulation that no one delinquent for a 90-day period would be extended further credit, and that all such would be required to pay cash.

The success of this program was attested during the week by competent authorities from two points of view. Said Frederic Balch, of the Schuylkill Paper Company, and secretary of the Philadelphia Paper Trade Association: "This credit plan, I can say unqualifiedly, has met with complete satisfaction on the part of the distributors, and I am confident as well with an almost equal amount of approval on the part of our largest buyers, the printing trade. It is a fact that when the enforcement program first went into effect a few of our customers expressed concern and some dissatisfaction with its provisions. It is, however, also a fact that since the actual operation criticisms have been growing less and less and expressions of approval more and more, coming even from those who first were a little inclined towards opposition.

The effect of the program has been to almost entirely eliminate unfair competition on the part of socalled chiselers—men who were so eager to get business that price and even profits were merely a secondary consideration and who were unable to continue in this unfair warfare because of the extreme and unwise liberality of those who supplied them with the raw material; their ability to pay for the material used seemed to be entirely secondary in their consideration, their only thought being to get business regardless of price. Since supplies have now been cut off from this class unless there is cash payment, much greater thought is being given to production costs and to profits with the result that it is now possible, as it was not before, for legitimate printers to adhere to fair prices and to get business as a result. We have had reports of printers who became vexed at the rulings of their usual supply houses and who declined their business, would go elsewhere, but when they experienced the same attitude with the other houses as a general thing they have returned to their original supply houses. I can say truthfully that the new plan is working with entire success and that it has been the finest thing to stimulate good, wholesome business which we distributors have experienced in recent years."

And then, from the point of view of the customers of the fine paper houses comes this statement from William A. Meeks, manager of the Typotheatae of Philadelphia: "I do not find on the part of the members of the Typotheatae any substantial evidence of opposition to the 90-day plan. As a matter of fact I do not believe any of our members are now on the C.O.D. lists and only a very few were on it when it was first established. The elimination of unwise credit extension by the paper distributors has been a most helpful influence in the printing industry."

Announcement is made that while the regulations are being rigidly adhered to, that does not mean that any printer whose accounts are more than ninety days overdue can secure no material except on cash. If he makes an entirely satisfactory and concrete funding arrangement he can be accommodated but if there is not strict adherence to the arrangement thus entered into, no credit will be extended.

Meanwhile, the program of the fine paper houses has had an incidentally beneficial effect on the coarse paper trade. In both Divisions the volume of goods handled during the past week showed a slight increase over the preceding, but in both conditions still remain somewhat spotty. In the paper stock business, conditions of a week ago are but little changed, although what difference has developed has been for the better. Slightly increased activity on the part of the board mills is reflected in their freer buying, but except for choice packings, prices are inclined to be weak. Meanwhile the higher grades of stock—soft and hard white shavings and book stocks—are being bought up quite as quickly as they can be packed; the amount however, is not large, but it manifests some tendency to increase with the advent of a holiday buying season.

Announcement is made by the Thos. W. Price Company that this year, as usual, for the last half score or more, a Christmas party will be given in its storage warehouse at 6th and Minor streets, at which employees and their friends probably numbering upwards of one hundred, will attend. There are to be professional and volunteer talent recruited from the ranks of the employees—a collation and dance—all carried out in the spirit of the late Thos. Fort, Jr., president, who entered into rest on Armistice Day a year ago.

E. D. Hemmingway, widely known in paper stock circles and a world traveler, made the rounds of his Philadelphia friends during the week. He came from his farm in Maine and will sojourn here for an indeterminate period.

The United States Tag Company has been formed as an additional division of the National Fiberstock Envelope Company, occupying 1200 square feet of floor space at 427 East Moyer street.

Extensive Pulpwood Cutting Operations

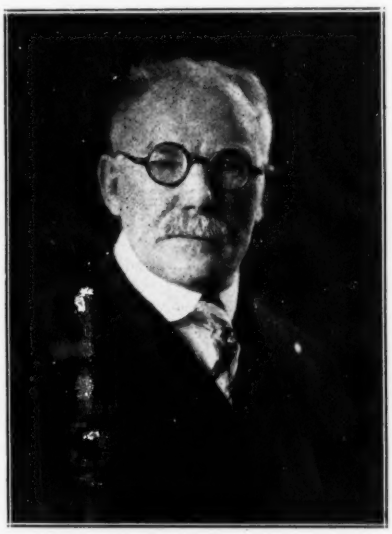
Assuring remunerative employment to large numbers of settlers in the eastern Manitoba area, contracts are now being made for some 70,000 cords of pulpwood for the Backus-Brooks Company mill at Kenora and the Manitoba Paper Company's plant at Pine Falls. The recent court order authorizing the Abitibi Power and Paper Company, now being administered by G. T. Clarkson as receiver, to purchase 20,000 cords for its subsidiary, the Manitoba Paper Company's plant at Pine Falls, is the culmination of a controversy in which the Government was involved.

Obituary

Lyman D. Post

Lyman D. Post, founder and publisher of the *Paper Mill and Wood Pulp News*, died in Miami, Florida, last Thursday, after a brief illness. Mr. and Mrs. Post had been in their winter home at Coral Gables less than a week before he was stricken.

Born on Staten Island, N. Y., some eighty years ago, Mr. Post was a direct descendant of the early Dutch settlers, the son of Captain Jacob Post, who, before the Civil War operated one of the largest merchant fleets sailing out of New York Harbor. Business reverses during the



LYMAN DERBY POST

War of the Rebellion wrecked the family fortunes and Mr. Post was thrown on his own resources in his early youth. After a short period of seafaring, he served his journalistic apprenticeship on the old New York *Press* and the *Morning Sun*, under Dana. He was eastern representative of the *Western Paper Trade* and when that publication changed hands in 1878 Mr. Post established *Paper Mill* as a weekly newspaper in the interests of the pulp and paper manufacturers of the United States. With characteristic energy he developed it into one of the most successful trade publications and continued to direct its management up to the time of his death.

Mr. Post was a constant traveler among paper mills in quest of news so that his readers might be kept informed of the progress in the art of making paper. In pursuit of this work, he witnessed all of the important developments that marked the paper industry's greatest growth in the United States. He attended every one of the fifty-six conventions of the American Paper and Pulp Association, and on the occasion of the fiftieth anniversary of the *Paper Mill* in 1927, he was publicly honored by the American Paper and Pulp Association at its Fiftieth annual banquet at the Waldorf-Astoria.

Feeling that the Superintendents Association performed an extremely valuable function in the interest of the industry as a whole, Mr. Post gave his constant and most active support to that organization. He attended every one of the annual meetings of the Superintendents Association.

In 1930 Mr. Post incorporated the *Paper Mill and Wood Pulp News* under the name of Lyman D. Post, Inc., and brought his associates into the corporation as partners. They were John Cornell, Joseph L. Hodgins and J. J. O'Brien, who were named vice-presidents, and Miss Helen Maloney, secretary-treasurer.

Mr. Post is survived by his widow, Mrs. Gertrude Post, who was his devoted companion on many of his visits to the paper mills and to whom the PAPER TRADE JOURNAL extends its deepest sympathy.

Paper Disk Code Hearing

WASHINGTON, D. C., December 4, 1933—The paper disk milk bottle cap industry, through its trade organization, the National Association of Bottle Cap Manufacturers presented a code of fair competition to Assistant Deputy Administrator David H. Tulley at a public hearing in the Hotel Willard recently.

The code would provide for a 56-hour week for watchmen, 176 hours averaged over any consecutive four-week period for shipping crews, chauffeurs, janitors, repair and maintenance men, etc., and 240 hours in any six-week period for other factory workers. An additional 48 hours of overtime would be permitted in each period from January 1 to June 30 and July 1 to December 31. The minimum hourly rate, provided in the code, is 38 cents for male and 33 cents for female labor with a 5-cent southern differential. A minimum weekly wage of $13.00 for office help is also included.

George J. Lincoln, Jr., executive Manager of the association, in presenting the code stated that there were 26 units in the industry, of which twelve, representing in excess of 75 per cent of the industry products by volume, belonged to the organization. With an invested capital of $5,500,000, the industry produces approximately 11,000,000,000 units a year with sales value of $3,475,000. It employs about 537 persons, of which 70 per cent are males and 30 per cent females. The code's provisions would add about 91 persons to the payrolls which would increase about 25 per cent.

J. R. Morris, president of the Toledo Bottle Cap Company, who spoke as the representative of six other companies, all non-members of the proponent association, took exception to the make-up of the code authority and to the southern differential for factory employees, which he said amounted to about 1 cent per thousand on bottle caps.

Considerable arguments resulted over the discussion of the clause in the unfair trade practices, forbidding the sale of "seconds" or misprinted tops under any circumstances. Mr. Morris insisted that there was a large market for such caps in certain states, particularly in the Southwest where the laws do not require careful marking, and that their sale saves much wastage. George Leonard, Mr. Skinner and Mr. Lincoln urged that the clause be left in on the grounds that the sale of seconds operated to undermine fair prices and that to sell seconds lowered the tone of the industry generally.

C. B. MacRae Joins Gummed Products Co.

The Gummed Products Company, of Troy, Ohio, announces the appointment of Charles B. MacRae as sales representative in its St. Louis office, located at 1801-1803 Arcade Building.

Mr. MacRae will be able to render prompt and efficient service on all inquiries in the territory regularly covered by that office, and will call on the trade at frequent intervals.

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 6, 1933—The Government Printing Office has received the following bids for 42,800 pounds of white index paper; Walker-Goulard-Plehn Company, at 9.61 cents per pound; Perkins-Goodwin Company, 9.64 cents; Aetna Paper Company, 9.03 cents; Whitaker Paper Company, 9 cents; Barton, Duer & Koch Paper Company, 8.95 cents; R. P. Andrews Paper Company, 8.73 cents; and Virginia Paper Company, 14.5 cents.

For 72,000 pounds of 21 x 32 inch white sulphite bond paper; Aetna Paper Company, at 5.75 cents less 3 per cent; Perkins-Goodwin Company, 5.17 cents; Sorg Paper Company, 5.5 cents; Cauthorne Paper Company, 5.44 cents; Old Dominion Paper Company, 5.38 cents; Dobler & Mudge Company, 5.60 cents; Reese & Reese, Inc., 5.98 cents; R. P. Andrews Paper Company, 5.29 cents; and Barton, Duer & Koch Paper Company, 5.5 cents.

For 20,000 sheets of white Japanese tissue paper; Japan Paper Company, $8.50 per M sheets less 2 per cent; R. P. Andrews Paper Company, $8.50 less 2 per cent; Mathers-Lamm Paper Company, $8.41; Whitaker Paper Company, $8.33; Old Dominion Paper Company, $8.48 and $7.48; Barton, Duer & Koch Paper Company, 5.5 cents.

For 2,000 pounds of plate wiping paper for embossing; Old Dominion Paper Company, 6.79 cents per pound; Whitaker Paper Company, 5.4 cents and 5.9 cents; Barton, Duer & Koch Paper Company, 6.25 cents; W. L. Jones, Inc., 5.5 cents less 1 per cent; Walker-Goulard-Plehn Company, Inc., 6.8 cents less 1 per cent; and Reese & Reese, Inc., 7.3 cents.

The Aetna Paper Company has been awarded the contract for furnishing 38,850 pounds of single ply white index paper at 9.15 cents per pound. The same firm will also furnish 34,125 pounds (350,000 sheets) of 24 x 38 inch white sulphite writing paper at 4.40 cents per pound and Jessup & Moore Paper Company will furnish 38,850 pounds (300,000 sheets) of 24½ x 38 inch white chemical wood mimeograph paper at 3.97 cents per pound. Bids for all of these items were received on November 20.

Dobler & Mudge Paper Company will furnish 36,000 pounds (4,000,000 sheets) of 8 x 10½ inch white mimeograph paper at 4.22 cents per pound, bids for which were received on November 17. Mathers-Lamm Paper Company will furnish 15,000 sheets of 24 x 36 inch white cloth lined cover paper at $82.28 per M sheets.

The Government Printing Office has received the following bids for 35,400 pounds of white chemical wood mimeograph paper: Lindemeyr Paper Company, 6 cents per pound; Cauthorne Paper Company, Inc., 4.46 cents; Jessup & Moore Paper Company, 4.9 cents; Bryant Paper Company, 4.76 cents; Old Dominion Paper Company, 5.597 cents; Perkins-Goodwin Company, 4.18 cents; Aetna Paper Company, 4.05 cents; Whitaker Paper Company, 5.39 cents; Dobler & Mudge, 5.6 cents; R. P. Andrews Paper Company, 5.33 cents; Barton, Duer & Koch Paper Company, 5.5 cents; Milton Paper Company, 5.7 cents, and Import Paper Company, 7 cents.

For 39,800 pounds of yellow mimeograph paper; Allied Paper Mills, 6.81 cents per pound; Dill & Collins, Inc., 6.3 cents; Old Dominion Paper Company, 6.169 cents; Perkins-Goodwin Company, 4.69 cents; Aetna Paper Company, 4.4 cents; Whitaker Paper Company, 5.92 cents, and 6.05 cents; Dobler & Mudge, 6.15 cents; R. P. Andrews Paper Company, 5.82 cents; Barton, Duer & Koch Paper Company, 5.58 cents; Import Paper Company, 8 cents, and W. L. Jones, Inc., 7 cents, less 1 per cent.

For 81,500 pounds of white sulphite writing paper: Groveton Paper Company, Inc., 5.15 cents per pound; Aetna Paper Company, 5.5 cents less 3 per cent; Cauthorne Paper Company, 4.64 cents; Old Dominion Paper Company, 5.589 cents; Whitaker Paper Company, 4.825 cents and 5.46 cents; R. P. Andrews Paper Company, 5.29 cents; Dobler & Mudge, 5.5 cents; Barton, Duer & Koch Paper Company, 5.34 cents; Reese & Reese, Inc., 5.49 cents, and Perkins-Goodwin Company, 4.46 cents.

Indianapolis Paper Markets Quiet

INDIANAPOLIS, Ind., December 4, 1933—A quiet week hit the local paper trade which was augmented to some extent by the holiday. From Wednesday on there was little business, most of the buying being deferred after the holiday until the coming week. Several buyers were out of the city during the entire period.

Paper men here are watching the commencement of operation of the paper and pulp and news print codes. It is early as yet to determine what the reaction will be, they say, but they are watching for price variations and mill reaction and likely will govern their buying from mills accordingly, particularly the jobbers of news print in this section. As it stands now the demand for news print is about the same as it has been for a week or so, but the general level is higher than it was a year ago. The vacation this week cut into demand, but from now on until Christmas the local trade is expecting some good business with the smaller papers of the state. Advertising seems to be increasing, they say, and this is demonstrated locally by the increased pages being printed.

If no other good comes from the past disastrous experience, there is certain not to be a return to lax credit conditions for some years to come. Back in the good old days most firms had credit managers, but the yen for business was so marked their advice sometimes was not heeded. Then, too, everybody seemed to be making money. But now, if you are not mighty well known and have had dealings with the firm before, try and get your name on the books.

The paper stock men also are interested in codes. They are expecting a better mill demand when the code signing is completed. Paying prices for both rag and paper still are very low and not much business is being done. Container men are doing a fair business and are looking forward to a better midwinter and early spring than they had last year, which was one of the worst in their history. The fine papers seem able to hold former prices, but demand is weak just now.

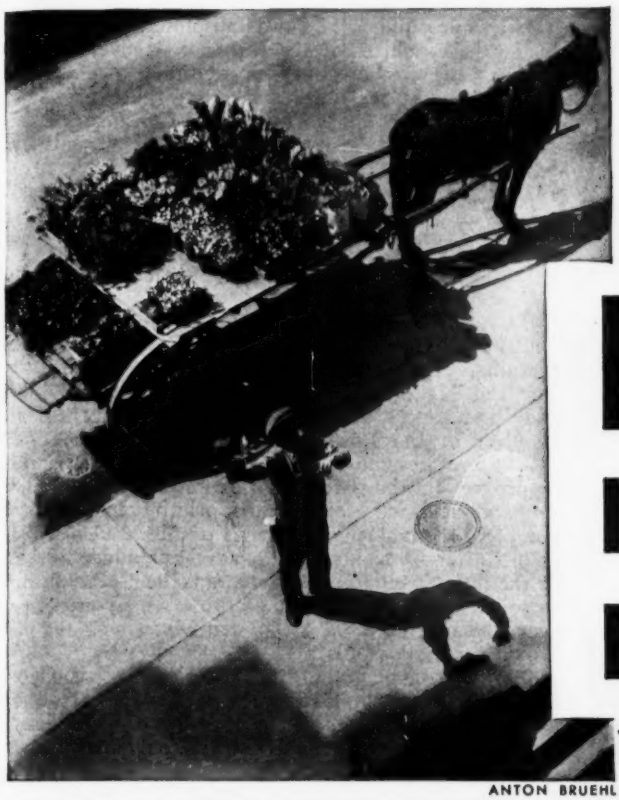
Wage Rates in Paper Bag Industry

In the article relating to the Paper Bag Manufacturing Industry Code printed in the issue of the PAPER TRADE JOURNAL of November 9, the wage rates were incorrectly given. Article V relating to wages in the code, is as follows:

Section 1—The minimum rate of wage of any mechanical worker or artisan employed in any bag manufacturing plant, or on work connected with or incidental to the operation of such plant, shall be as follows:

(a) Northern Zone, which shall consist of all the territory of the United States except the States named in subdivisions (b) and (c): Male labor 38 cents per hour. Female labor 33 cents per hour.

(b) Central Zone, which shall consist of the States of Delaware, Maryland, Virginia, West Virginia, Kentucky, Tennessee and North Carolina, and the District of Columbia: Male labor 35 cents per hour. Female labor 30 cents per hour.



ANTON BRUEHL

NO *business* IS SMALL BY CHOICE

The growth of a business is in direct ratio to the service it renders.

Every business, down to the lowliest street vendor, wants to grow.

But the mere desire to grow is not enough. Business leadership comes only to those who merit it.

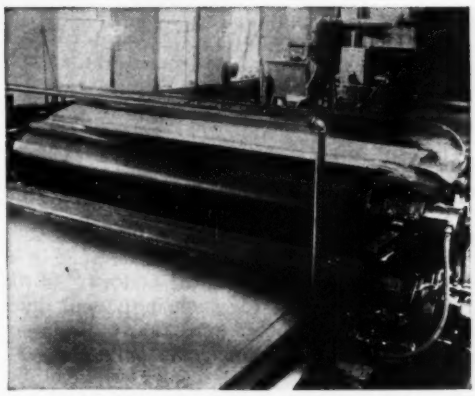
No amount of selling will bring it: no amount of advertising will hold it.

Your soundest justification for confidence in a given product is the position its maker holds in the industry.

The United States Rubber Company has gained its present position as the world's largest manufacturer of mechanical rubber goods through no miracle—that place has been won. And it is *held* with the same policies and the same standards that made *"U. S."* the leader in this field.

We don't mean by this that there are not other good mechanical rubber products. Any leading make will give you excellent value. Any manufacturer can fill your specifications to the letter. Our point is that the United States Rubber Company, with its exceptional facilities and resources, gives you something more, something that cannot be written into a specification. You, too, could benefit by that *extra* service through which *"U. S."* has earned its place.

We believe you will find it worth your while to consider what *"U. S."* can offer you in belting, hose, packing and similar rubber products.



U. S. Rubber Rolls, Rollstone Rolls, etc., are the accepted standard in many leading Paper Mills.

It has become the custom, in many industrial plants, to buy largely on a price basis. Unwilling to look into the future, buyers insisted upon immediate savings. Today, with the growing demand ahead, the actual worth of an article again measures its final cost.

"U. S." offers you a most complete line of rubber goods embracing every type of belting, hose, packing, moulded goods, electric wire and tape, rubber rolls, rubber tank-linings, etc., products which have earned a reputation, throughout industry, for *that extra service.*

United States Rubber Company

1790 BROADWAY NEW YORK CITY

STOCKS IN ALL INDUSTRIAL CENTERS

"U. S." RUBBER PRODUCTS GIVE THAT EXTRA SERVICE

Cylindrical Liquid Tight Code Hearing

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., December 4, 1933—The cylindrical liquid tight paper container industry, which, according to spokesmen for the industry, weathered the depression better than it has the past few months due to a rise of more than 25 per cent in the cost of raw materials, recently presented its proposed code of fair competition to Assistant Deputy Administrator David H. Tulley at a public hearing in the Willard Hotel.

George J. Lincoln, Jr., executive manager of the Liquid Tight Paper Container Association, proponent of the code, told the Deputy Administrator that the code, as written, represented everything the industry could possibly do at this time toward the betterment of conditions generally. Every member of the industry, he declared, has lost money steadily during the past few months due to an increase of more than 25 per cent in raw materials.

In his presentation, Mr. Lincoln stated that there were thirteen units in the industry, of which all but one were members of the association. The exception, a California concern, found it impossible because of the great distance separating them, to join, but had cooperated in every way and favored the code.

With an invested capital of $3,500,000, he said, the industry has a yearly output of 200,000,000 units with a sales value of $2,250,000. During the depression, the unit output has shrunk 20 per cent and the dollar value 33 per cent.

The industry employs 700 persons, about half of which are females, has a $700,000 payroll and expects a 16 per cent increase in employment and a 25 per cent payroll increase as a result of the code.

The following maximum hours are provided: watchmen 56 hours a week; shipping crews, chauffeurs, truck drivers and helpers 176 hours in any four week period with not more than ten hours in any one day; the same average for janitors and those engaged in the maintenance and repair of plant and machinery facilities but not more than nine hours a day; and a 240-hour average in any six-week period for other workers in the factory. In the latter class sixty hours of work for each individual during the peak season from May 1 to August 1, would be permitted. In his presentation, Mr. Lincoln told the Deputy Administrator that in 1929 the average work week had been 51 hours for male and 48 hours for female help.

A minimum wage rate of 38 cents per hour is set up for male employees and 33 cents for female employees in the North with a five-cent differential in both for the South. A minimum weekly salary of $13.00 per week for all other employees is also established. Lieutenant Tulley called attention to the fact that this rate would result in discrimination against office employees, but A. M. Boothby, one of the proponents, stated that this figure would actually apply only to office boys and girls.

The Assistant Deputy Administrator asked if the industry would not be satisfied with a straight 40-hour week with the 60 extra hours permitted during the peak season. Mr. Boothby seemed to think this would work out for him personally but speaking in behalf of the proponents generally, E. W. Skinner pointed out that this would be hard on employees who would not then be able to bring up their average lowered during slack periods. "It would," he stated, "wreck the continuity of employment."

John Donovan, presenting a brief in behalf of Herbert W. Sullivan, second vice-president of the International Brotherhood of Pulp, Sulphite and Paper Makers of America, asserted that the hours provided would not increase employment and that a flat 40-hour maximum hour work week, while still too high was absolutely necessary to effectuate the policies of the National Recovery Act. The hourly wage was also too low, according to Mr. Donovan and he opposed the differential for women.

Representatives of the Labor and Consumers Advisory Boards as well as the representative of the Legal Division asked for more time to study the clauses included in the appendix designed to eliminate alleged jobbers actually in the pay of retail chains.

Boston Paper Trade Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, MASS., December 4, 1933—At a sales meeting held at the office of John Carter & Co., Inc., Saturday morning, representatives of the Brown Company, of Portland, Me., in the interests of Nibroc bonds and ledgers and other papers, discussed these lines. Eugene Hanson, manager of the Boston office of the Brown Company, gave a brief resumé of the history of that concern, noting its progress in the purification of fibres. T. G. Pell, New England field representative of printing papers, brought out the important characteristics of the grades which the John Carter Company is to handle, explaining the nature of the pulps, Solka and Cellate, and their relationships to these lines. Harold Collins, of Portland, advertising manager, demonstrated the Solka Kit, describing the use of Solka in various industries.

John Leo, manager of the towel sales division of the Brown Company in Portland, conducted a sales meeting recently at the office of the Andrews Paper Company. Other representatives of the Brown Company at the meeting were Norman Beardsley, William Koch, Herbert Reinhard, Kindon Normington and Eugene Hanson.

At a sales meeting held recently at the office of the John S. Cheever Company, Mr. Hanson discussed the Brown Company's Solka in relation to wrapping paper and Solka twine.

A sales meeting was held at the offices of Carter, Rice & Co., Corp., Saturday morning, at which the guest speaker, Harold R. Hopkins, of the Oxford Paper Company, Rumford, Me., acquainted the executives and sales force of the former concern with Oxford's advertising and promotion plans for the balance of 1933 and through 1934. Distribution of the material presented by Mr. Hopkins will soon be sent to the printers of New England through Carter, Rice & Co.

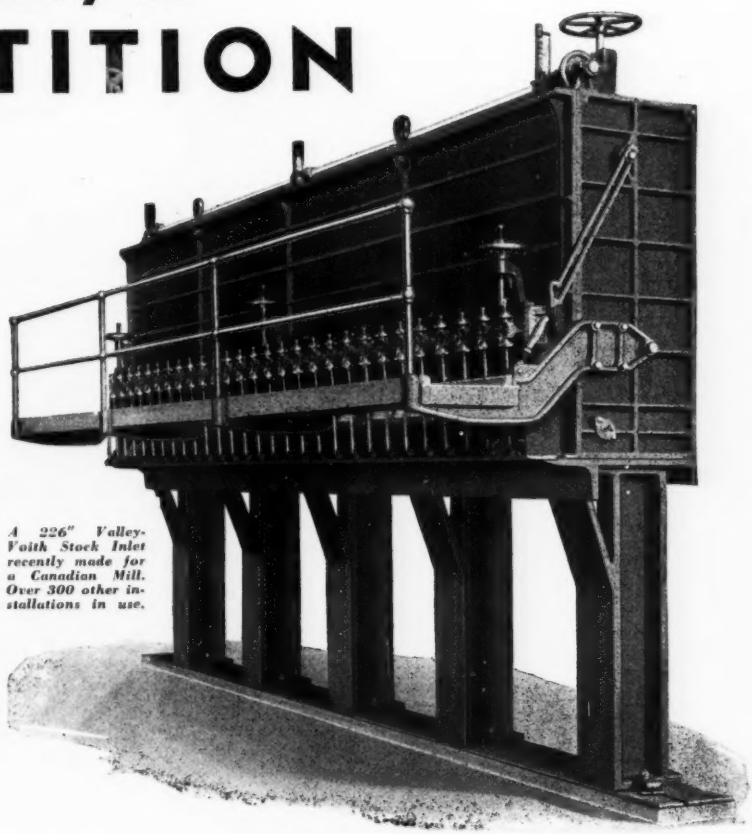
At a meeting of the New England Chapter of the American Paper Mill Supplies Institute, held Monday evening, reports of the code hearing at Washington November 22 were given. The hearing took up the proposals for fair practice rules at the same time as the provisions of labor wages and hours. Representatives of the New England Chapter at Washington were Harry Shuman, of Braver, Healey & Co.; R. G. Graham, of Jas. J. Graham Paper Company; R. F. Graham, of P. H. Graham Company; Morris Feinberg, of Boston Paper Board Company; and James E. Folsom of D. DeStefano Company, Inc., all of Boston.

The plant of the American Writing Paper Company at Holyoke, Mass., is to be closed on Saturdays, but the New England office in Boston will remain open.

Industrial Advisors Appointed

WASHINGTON, D. C., December 6, 1933—The Industrial Advisory Board of the National Recovery Administration announces industrial advisors for the following hearings: Fibre Can and Tube Industry, J. L. Coker, of Hartsville, South Carolina; Fibre Wallboard Industry, Audenried Whittemore, of New York.

Still Plenty of COMPETITION



A 226" Valley-Voith Stock Inlet recently made for a Canadian Mill. Over 300 other installations in use.

THERE is still plenty of competition left in the paper industry—*the competition of EFFICIENCY.*

And this efficiency expresses itself in terms of *better paper* produced at the very *lowest possible cost.*

Your Sales Department, more than ever, needs *maximum quality*; your Accounting Department needs *low operating* costs.

You can go a long way toward satisfying these vital needs by putting in a Voith Stock Inlet. The formation and uniformity of your paper will be improved to the limit of modern perfection, while at the same time you can speed up your machines and reduce your cost per ton. You can also make a substantial saving in wires.

Now is the time for definite action. The national economic trend is certain, and your wisest policy is to look for improvement *inside your own mill.* Write us for detailed information — including special recommendations, technical data, production facts, quotations and estimates on repairs.

VALLEY
IRON WORKS COMPANY
Plant: Appleton, Wisconsin
New York Office: 330 Madison Ave.
Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

Beaters • Jordans • Voith Stock Inlets • Roll Wrapping Machine • Pumps • Deckers
Screw Presses • Laboratory Equipment • Plug Valves • Flat and Rotary Screens

CHEMICAL EXPOSITION OF ABSORBING INTEREST

(Continued from page 15)

The spectro-analytical group likewise attracts a great deal of attention. On display for the first time at the Chemical Show is the huge Littrow Quartz Spectrograph. The linear dispersion of this instrument is so great that it permits successful analyses of the most complex spectra. This permits accurate work, both qualitative and quantitative.

Another time saving group of instruments is the Refractometer. Both Abbe and Dipping types are shown together with an explanation of the relative accuracies and advantages of both types.

Still another group shows a complete line of colorimeters and turbidimeters together with the photo-electric Scopometer. This new instrument permits a speed of colorimetric and turbidimetric analysis that ideally adapts it to large scale work. The great accuracy of this group of instruments is due to outstanding improvements in design.

The Bristol Co.

One of the principal attractions at the Show is the booth of the Bristol Company, of Waterbury, Conn. Here you can get the answer to "How to Better Quality at Lower Cost." By providing a day by day chart record of the temperature, Bristol's Recording Thermometers reveal any and all fluctuations. They give a moving picture of process conditions—help banish waste, rejects and losses—and improve quality and make possible savings in fuel, time and overhead. They offer a valuable record that can be analyzed, studied, filed and preserved for future guidance.

DeLaval Separator Co.

The DeLaval Separator Company is exhibiting its products at an attractive booth on the main floor. Included in the display are Industrial Separators, Laboratory Centrifuge, Separator Bowls and Clarifier Bowls.

Electro Bleaching Gas Co.

One of the most interesting and attractive booths at the Show is that of the Electro Bleaching Gas Company. Here are displayed liquid chlorine, bleaching powder and many other products of the company. The plant of the company is located at Niagara Falls, N. Y. Modern type buildings and the latest scientific equipment favorably affect the production of this versatile chemical. Container equipment is ample in scope and size to meet every requirement. Steel cylinders of two sizes, single unit tank cars in two sizes, and multi-unit tank cars enable the user of liquid chlorine to order efficiently and according to his needs.

General Electric Co.

Motors, control, and an exhibit from the House of Magic feature the display of the General Electric Company. A cut-away gear-motor, a gear-motor in operation with tachometers showing the relative speeds at the drive and driven ends, a Thyratron-controlled motor in operation, and a splash-proof motor operating under a spray of water in a glass case comprises the special exhibits on display in the company's large space on the main floor. The General Electric Company is represented by W. W. Miller, K. H. Runkle, L. W. Shugg, C. T. McLoughlin, H. T. Todd, B. J. Rowan, S. C. Rider, and F. S. Hartman.

Hercules Powder Co.

Products of the Hercules Powder Company, Inc., and its subsidiary, the Paper Makers Chemical Corporation, are attractively displayed at the Show, and ably demonstrated. Among the chemicals manufactured for the paper industry are Rosin Size, Wax Size, Casein, Paraffine Emulsions, Silicate of Soda, Sizing Varnish and other special sizing and waterproofing materials, Sulphate of Alumina or Paper Makers Alum, Paper Fillers, Foam Killers, Sulphonated Oils and Tallows, Stearic Acid Oil Soaps, Felt Cleaners, Antifroth Oil, Pine Oil, Casein Solvents, Acids and Alkalies, Satin White and Calcium Aluminate.

Illinois Steel Co.

The Illinois Steel Company section of the large and attractive exhibit of the United States Steel Corporation on the main floor of the Exposition, creates great interest. One of its products, "Plykrome", offers at low cost all of the advantages of Stainless Steel in any installation where corrosion resistance is required only on one side of a plate. For tanks, pressure vessels, food containers, cooking vats and a host of other types of equipment, "Plykrome" is the ideal metal.

National Tube Co.

Of absorbing interest to the paper industry is the exhibit of the National Tube Company, a subsidiary of the United States Steel Company. For extraordinary resistance to corrosion, National Stainless and Heat Resisting Pipe and Tubes have an enviable reputation. Heater coils, digester relief lines, pulp stock lines, bleaching tank piping, and similar pipe lines will give much longer service if made from National U. S. S. 18-8 Stainless and Heat Resisting Pipe and Tubes. This superior material is made by the seamless process from the finest quality electric-furnace steel of chromium-nickel alloy and affords a resistance to corrosion never before experienced. Repairs and replacements are reduced to a minimum when National Stainless Pipe and Tubes are used.

Proctor & Schwartz, Inc.

Important new developments in driers for many industries are being shown at the large space on the main floor occupied by Proctor & Schwartz, Inc. Here are assembled a group of Proctor & Schwartz machines that show the advances made in modern drying methods for chemical process industries, a group also typical of Proctor achievements in other fields. From today's conception of a small tray drier to an entirely unique method of drying continuous sheet materials, the Proctor driers exhibited offer a lot to see which is new and much to learn that may be revolutionary in drying materials efficiently and economically.

Fan Manufacturers Association

The National Association of Fan Manufacturers announce the opening of an office at 5-208 General Motors Building, Detroit, Michigan, for the purpose of coordinating their activities under the National Recovery Act.

The association, which has been in existence continuously since 1918, represents through its personnel the major portion of the so-called Fan and Blower Industry.

With this background of experience the association had available the necessary organization to cooperate with the President in his program.

The new office will be in charge of L. O. Monroe, who has been identified with the Industry since 1911.

The National Association of Fan Manufacturers has embarked upon a program of expansion and development of which this is one of the first steps.

WORLD-WIDE . . . AND IN YOUR PLANT

A Vital Cog
in cost control

Today, labor costs are higher! Raw material costs are higher! Selling costs are higher! Now is the time to profit by the experience of world-wide plants in every industry and let Gargoyle Lubricants help reduce your major *plant* costs.

For, in your plant, too — Gargoyle Lubricants can reduce power costs 3% to 10%. They can lower your maintenance and repair expense. They may help speed up your production schedules. They'll certainly insure you against machinery shutdowns.

The cost of lubrication is a trifling one — probably less than 1% of your total costs of conversion. Yet this seemingly insignificant item controls major costs in your plant. Plant records, written in every language, prove that Gargoyle Lubricants *can easily save you many times your total annual cost of oil.*

Any Socony-Vacuum representative will be glad to show you lower-cost records made by leading plants in your own industry . . . to suggest means by which you can lower today's costs in *your* plant.

Socony-Vacuum Corporation, 26 Broadway, New York City. Branches and distributors throughout the world.

SOCONY-VACUUM
CORPORATION

Production of Transparent Wrapping Paper Increases in Japan

Production of transparent cellulose sheeting is increasing rapidly in Japan, according to advices to the Commerce Department from Assistant Trade Commissioner D. W. Smith, Tokyo. This development has been particularly noticeable since December, 1931, when the Gold Embargo Act made the price of imported French and American paper prohibitive.

Manufacture of this type of paper in Japan began in 1928, the report shows, production in that year being valued at 5,000 yen. (Kilo equals 2.2 pounds Mint par value of yen equals 49.85 cents.) In 1931 output had risen to 64,500 kilos valued at approximately 100,000 yen. While official production figures for 1932 are not yet available, it is estimated that output in that period amounted to about 500,000 yen. The capacity of Japanese mills making transparent cellulose sheeting is being extended and it is estimated locally that production in 1934 will be in the neighborhood of 12,000 reams per month.

Not only have Japanese mills produced a sufficient quantity of this product to meet domestic requirements, but because of the low price at which it is offered, they are finding a ready market abroad. Australia and Canada are the principal markets for Japanese transparent cellulose sheeting at the present time, and small quantities are also shipped to the United States, Netherlands, India and China. Official statistics do not classify exports of this item separately but they are known to be steadily increasing.

Equipment Manufacturing Code Hearing

A public hearing was held at Washington, D. C., yesterday, Wednesday, on the code for the beater, jordan and allied equipment manufacturing industry. This code was filed by the manufacturers' association of that name, claiming to represent 95 per cent of the industry. Division Administrator Malcolm Muir conducted the hearing.

The proposed code fixes a basic maximum work week of 40 hours, except for executives, technical employees and their respective staffs who are paid $35.00 a week or more, traveling, sales and service employees, watchmen and firemen, provided that these limitations shall not apply to conditions of peak demands, in which cases employees are permitted to work 48 hours per week in any six months' period, for six weeks, provided further that the limitations shall not apply to employees engaged in maintenance and repair work. Time and one-third is provided for overtime.

The code also provides a minimum wage of 40 cents an hour unless the rate was less on July 15, 1929, but in no event less than 35 cents an hour. The rate for employees other than those engaged in production is $15.00 a week.

New Paper House for Watertown

CARTHAGE, N. Y., Dec. 4, 1933—Arrangements are being made by Kenneth W. Coseo, former office manager of the Champion Paper Company, to start a new wholesale paper jobbing and supply business at Watertown within the next few weeks. Mr. Coseo is now moving his family to Watertown where he will complete details for the starting of the new concern. He has already had considerable experience in paper mill circles. He entered the employ of the Champion Paper Company in 1927 and served in an executive capacity until 1932 when he was transferred to the sales department of the St. Regis Paper Company. Announcement was made that he would continue his duties with the latter concern until the first of the year, although moving to Watertown.

Paper Firms in Ohio NRA Parades

DAYTON, Ohio, November 27, 1933—A number of NRA parades and demonstrations have been held in Miami Valley towns recently but none eclipsed that of Hamilton as far as displays of paper manufacturing plants were concerned.

The Champion Coated Paper Company was represented by many floats and all were elaborately decorated. Besides, the entire working force and the clerical staffs were in the line of march. It was a magnificent demonstration of loyalty to the Government's recovery plan.

The head of the Champion company is president of the Chamber of Commerce and he lost no time in arranging for a general observance on the part of all manufacturing companies in Hamilton.

The paper and allied trades also were well represented in the big parades held in Dayton, Piqua, Sidney, Springfield and other points. Even some of the smaller mill towns in the Miami Valley conducted meetings and parades to boost the national campaign.

Conditions are improving, according to word from most mill sections, and a hopeful attitude is held by the majority of the business interests in this section relative to the revival of general trade, in which the paper business should have its full share.

Carthage Mill Operating at Capacity

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., December 4, 1933—Capacity operations are now in effect at the newly organized Carthage Paper Makers, Inc., and plans call for an increase in the working force. A crew of men have completed the remodeling of the large paper machine at the mill and a new cutter has also been installed. It is expected that the plant will now have a daily capacity of about 65 tons. Enlargement of the office department has also been made to provide space for additional help and announcement was made that the entire roof of the mill is to be repaired as soon as the material arrives. Several new grades of paper board has been developed and orders already booked leads to the belief that a bright future is ahead for the new concern. The renovation work now nearing completion will allow the plant to run at full capacity for the first time in several years. Additional men have already been taken on and it is understood that an entire shift of workers will be necessary in the near future. The plant is owned by the Carthage Pulp and Board Company, and was leased by the new concern under a co-operative scheme. Production has been almost tripled since the start of operations several months ago.

Exclusive Washington Distributors

The P. H. Glatfelter Company announces that arrangements have been completed whereby their products will be sold in Washington exclusively by the Barton, Duer & Koch Paper Company.

Though Glatfelter Papers have been distributed by the Barton, Duer & Koch Paper Company for a number of years, this arrangement for exclusive distribution is an innovation in the merchandising plans of these two companies for Washington.

Among the papers which are available quickly either from Barton, Duer & Koch's warehouse in Washington or overnight from the mill, are Glatfelter's Monoplane, Spring Grove, Pennsylvania, and Provenworth Book Papers; Monoplane and Pennsylvania Bond, and Mimeograph Papers.

$500 REWARD

will be paid to the person supplying me or the local police, with the first information leading to a successful prosecution of any person or firm manufacturing paper outside the Irish Free State, bearing the watermarked words "WARRANTED IRISH MADE SWIFT BROOK PAPER MILLS LIMITED."

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LYMAN DERBY POST

The death of Lyman Derby Post deserves more than passing mention. His career was unusual even in times when the usual has become more or less commonplace. He founded the *Paper Mill and Wood Pulp News* in 1878 and energetically directed its destiny until a short time before his death. This is a record that is not frequently equalled in the publishing business and seldom surpassed in any line of endeavor. Mr. Post served the pulp and paper industry acceptably and well for more than half a century and his passing onward will be regretted in paper circles by a host of friends all over the country.

LOCKWOOD'S DIRECTORY

The 1934 edition of Lockwood's Directory of the Paper and Allied Trades was recently issued. This is the fifty-ninth edition of this standard work.

The changes in this edition of the Directory have naturally been very numerous. It has been necessary to make many eliminations and many changes in firm names and personnel because of reorganizations and the other legal routine incident to the unsual times through which we have been passing. The last minute changes and additions, just before going to press, especially have been extremely heavy owing to the noticeable improvement that has taken place in every section of the pulp and paper industry.

As usual, the changes have been very numerous and important in the Mill Section of the Directory. There have been no new mills, but it has been necessary to enter a vast number of corrections regarding company officials, grades of paper manufactured and the idle mills which have become going concerns. It has been endeavored in the most painstaking way to ascertain all of these numerous changes and to include them carefully in the Directory.

Added to the Directory two years ago, the Mill Equipment and Supply Department has demonstrated its helpfulness in many ways. In this department are listed without charge manufacturers of pulp and paper mill machinery and supplies under as many headings as necessary for an adequate showing of their products. This department may, therefore, be considered as representative of the machinery and supplies required by the entire pulp and paper mill field. If eligible new concerns or eligible concerns who may have been omitted will inform the publishers, their names will be included in the next edition of the Directory. Addresses of firms are not given under the various headings, but an alphabetical list of all the firms listed is printed at the end of this Department. In general, the approved methods in compiling a work of this kind have been followed, furnishing an easy and valuable source of information for everything in the line of machinery and supplies required in the manufacture of pulp and paper.

Many specially interesting changes and additions will be observed in the Trade Associations Section. Numerous new associations have been formed and practically all of the old ones have been reorganized to meet the requirements of the NRA. Under the new conditions of affairs, grave responsibilities have been thrust upon the trade associations and their importance has been greatly increased.

In general, it is believed that the Directory will be found as accurate and complete as it is possible to make it. This applies not only to the sections to which reference has already been made, but to all the other sections as well, including the Classified List of Pulp and Paper Mill Products, the Paper Specialties Section, Glazed, Coated Paper and Board Manufacturers, Rag and Paper Stock Dealers, Rags and Paper Stock Consumed by the Mills, General Paper Merchants, Paper Box Manufacturers, Paper Bag Manufacturers, Envelope Manufacturers, Papeterie Manufacturers, Pulp Testing Chemists, Office Addresses of Mills and Mill Supply Houses and the Watermarks and Brands.

The Directory is issued in two editions, the regular edition of 1092 pages and the Travelers' edition of 252 pages, including only the pulp and paper mill section. The cost of each edition is $7.50 or $7.00, cash with order. Orders should be sent to the publishers, the Lockwood Trade Journal Company, 15 West 47th Street, New York.

N. Y. CODE STATUTE PROVISIONS

Code authorities acting under permanent codes are advised by James F. Hodgson, Regional Compliance Director for the NRA, not to lose sight of the advantages which they may obtain by following the provisions of the New York State law known as Chapter 7 (a) of the laws of 1933.

This is the so-called Schackno Bill which adopts the Codes of Fair Competition as the law of New York State; provided, however, that there is filed with the Secretary

of State a certified copy of the Code. Such a copy may be obtained from the NRA at Washington, and upon its filing with the Secretary of State of New York it becomes effective as governing intrastate transactions in the State of New York. Any violation of code provisions will thereafter be punishable as a misdemeanor in New York State, carrying as a punishment a fine of not more than $500 for each offense, and for each day such violation continues a separate offense subject to the $500 fine shall be deemed to have been committed.

The New York Statute is especially pertinent because, under it, if the code gives the power to the Code Authority, or any other tgroup, to subpoena witnesses, to compel the production of books, papers and records, etc., a like power is vested with regard to intrastate transactions. Furthermore, the Supreme Court of New York State is given jurisdiction to prevent and restrain violations of any code of fair competition filed pursuant to the Act and to prevent and restrain "the commission within this State of any act tending to defeat or hamper the operation and effectiveness within the State" of the National Industrial Recovery Act, not only at the instance of the Code Authority but "at the instance of any party whose interests are, or may be, adversely affected by such violations or acts."

In view of the broad provisions of the New York Statute, it is suggested that those authorized to act, or those whose interests may be adversely affected in the case of violations, should give serious attention, especially in the case of purely intrastate transactions, to the possibility of invoking the New York State law.

Great Northern Adds Workers

BANGOR, Me., December 2, 1933—In a public reference to the news print code signed by President Roosevelt, the Great Northern Paper Company declares that the principles established by the NRA are worthy of the support of all citizens because they have been designed for the purpose of creating fair prices in all industries and commercial enterprises.

In anticipation of the readjustment that will be called for under the code the Great Northern Paper Company has added a total of 1075 employees in its operation, 128 of these being in its mill department and 947 in its woods department.

This large increase in the number of employees was made over a number of months, while the mills of the company were operating on the "short shift," and in anticipation of the readjustment which officials knew would be necessary under the news print code.

William Hilton, vice-president of the company, stated that the Great Northern has been operating under the "short shift" for some months, thus anticipating one of the requirements of the news print code.

Mr. Hilton in commenting on the woods division, stated that there was no difficulty in getting plenty of experienced woodsmen for the various operations, all of which are in the vicinity of Millinocket, in the Cooper Brook region, and other locations near Moosehead Lake. Rough pulp wood is being harvested at the various operations.

Practically all of the new men employed in the woods division came from Bangor and immediate vicinity.

Jute and Paper Compensating Tax Rates

WASHINGTON, D. C., December 6, 1933—Rates of compensating taxes on jute fabric, jute yarn, and paper, for specified uses, have been fixed by the Secretary of Agriculture, in accordance with those provisions of the Agricultural Adjustment Act which empower the imposition of a tax on commodities that obtain competitive advantages over a basic commodity, because of the imposition of a processing tax on the basic commodity.

After investigation and two public hearings, Secretary Wallace proclaimed that: "I do hereby find that the payment of the processing taxes upon cotton is causing and will cause to the processors thereof, disadvantages in competition from jute fabric and jute yarn by reason of excessive shifts in consumption between such commodities or products thereof." He made the same finding as regards paper for certain uses. A research staff under D. S. Murph, chief of the cotton processing and marketing section of the Agricultural Adjustment Administration, has been engaged for three months in investigations of the competitive relations between cotton and other commodities.

The processing tax upon raw cotton, which became effective August 1, is 4.2 cents per pound. The compensating taxes on jute and paper are effective as of December 1, 1933.

The compensating rate of tax upon the processing of jute fabric, to prevent competitive disadvantages to cotton processors, was fixed at 2.9 cents per pound of jute fabric on the first domestic processing of jute fabric into bags.

The compensating rate of tax upon jute yarn was fixed at 2.9 cents per pound of jute yarn on its first domestic processing into twine of a length of 275 feet per pound or over, finished weight or twine.

The compensating rate of tax on paper was fixed at 2.04 cents per pound weight of paper on its first domestic processing into multi-walled paper bags; 3.36 cents per pound weight of paper on the first domestic processing of coated paper into coated paper bags; 2.14 cents per pound weight of open-mesh paper fabric, on the first domestic processing of open-mesh paper fabric into open-mesh paper bags; 0.715 cents per pound weight of paper on its first domestic processing of paper into paper towels; and 4.06 cents per pound weight of paper on the first domestic processing of paper into gummed paper tape.

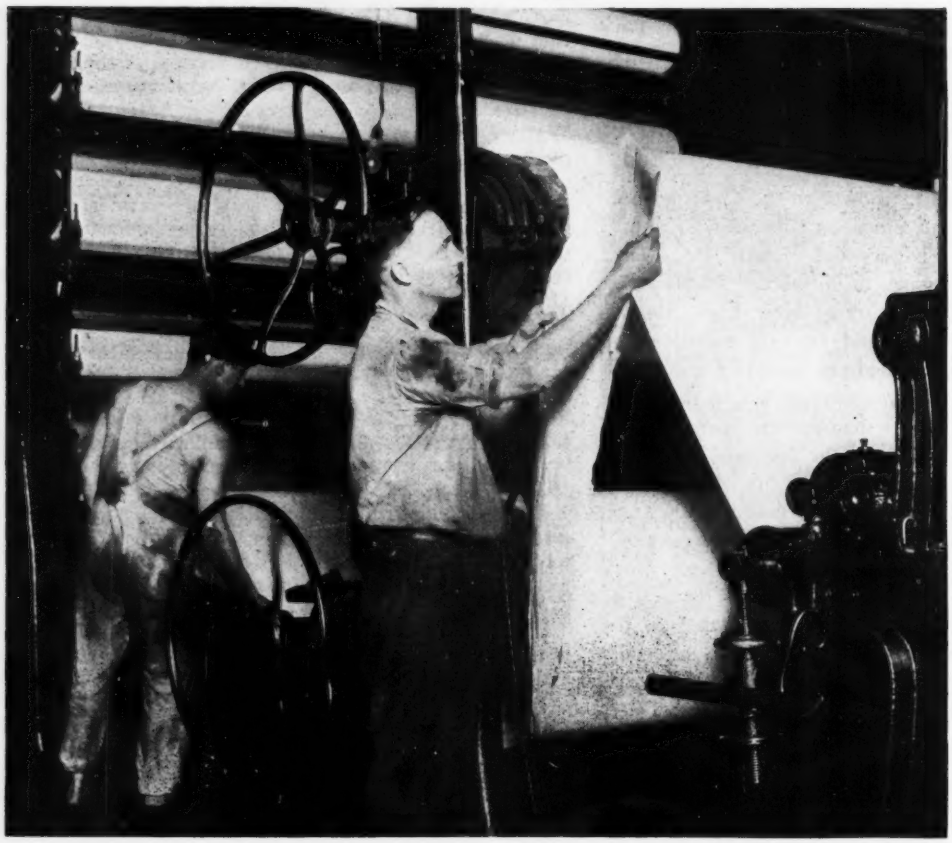
October News Print Production

Production of news print in Canada during October, 1933, amounted to 191,452 tons and shipments to 190,326 tons, according to the News Print Service Bureau. Production in the United States was 82,052 tons and shipments 81,580 tons, making a total United States and Canadian news print production of 273,504 tons and shipments of 271,906 tons. During October, 25,916 tons of news print were made in Newfoundland and 1,484 tons in Mexico, so that the total North American production for the month amounted to 300,904 tons.

The Canadian mills produced 33,907 tons more in the first ten months of 1933 than in the first ten months of 1932, which was an increase of 2 per cent. The output in the United States was 66,739 tons or 8 per cent less than for the first ten months of 1932, in Newfoundland 10,639 tons of 5 per cent less, and in Mexico 2,405 tons more, making a total decrease of 41,066 tons or 2 per cent.

Stocks of news print paper at Canadian mills are figured at 38,415 tons at the end of October and at United States mills 18,991 tons making a combined total of 57,406 tons compared with 55,808 tons on September 30, 1933.

Coating



Chemicals

CASEIN — CHINA CLAY — SATIN WHITE

If making fine coated papers is your business, no one needs to tell you your coating equipment and chemicals must be GOOD. But maybe you don't know that coating chemicals by American Cyanamid & Chemical Corporation have more than a hundred years' "service record". This name is comparatively new; but in its coating chemicals division a long-established company is represented . . . a company formerly independent, known the world over for the quality of its products and its familiarity with paper makers' needs.

AMERICAN CYANAMID & CHEMICAL CORPORATION

535 Fifth Avenue, New York

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

The Electron Tube in the Paper Industry*

By Amos J. Germain[1]

Although the first observation of the photo-electric phenomena was made in 1881, it has only been recently that applications of vacuum and gas filled devices in industry have been used extensively. Applications of the electron tube have been limited somewhat to the familiar electric lamp, the X-ray tube, and the vacuum tube for radio receiving and broadcasting, and for communication circuits. Thus far, industry has made very little use of photo-tubes and glow-discharge devices; this delay in making widespread use of such devices is due to the fact that until recently they had not been sufficiently developed for applications where reliability, long life, and constancy were required. Conditions are changing rapidly, however, and as development work progresses, the applications of these devices will become more and more widespread.

Photo-electric devices have been used in laboratories for some time, and are now an essential feature in television, tele-photography, and talking motion pictures. The photo-tube, commonly called "electric-eye," can solve many industrial problems, for unlike the human eye, it is unhampered by the trials of human psychology and fatigue. Some glow-discharge devices operate on as little as a few millionths of a watt, and have an amplification factor of several millions. The possibilities of such sensitive apparatus must be apparent.

Before entering into the discussion of the practical uses of the photo-electric cell, it might be well to give a brief description of the various types of photo-electric tubes. Photo-electric tubes are divided into three classes. The first type is the photo-voltaic type. The second type is the photo-resistive type. The third type is the photo-emissive type.

The photo-voltaic cell, as the name implies, generates a voltage under the action of light. Photo-voltaic cells are found in nature. Every leaf, if irradiated, indicates minute voltage changes. These, however, are too low to be measured without special amplification. Certain chemical compounds have been developed, however, which make it possible to make photo-voltaic cells that have a fairly large output. Photo-voltaic cells are of two types, namely, the dry type, which uses copper oxide discs and the liquid type which uses various chemicals and solutions to produce photo-electric effect.

The photo-resistive type, or sometimes called the photo-conductive type is one in which the ohmic resistance of a substance such as selenium varies with the amount of light falling upon it.

During the past few years the photo-resistive type has been given considerable prominence and has as its active element a non-metallic substance of the sulphur group called selenium. This cell is a form of light sensitive device which functions by reason of the variation in conductivity of the substance selenium with illumination. While the change in conductivity of selenium is considered to be due to the release of photo-electrons, the normal construction and operation of these cells is such that they do not fit well into the present conception of photo-electric cells. By this we mean either high vacuum or gas filled tubes. To date the selenium cell has not been reduced to the same degree of practicability as have the devices which will be discussed. Some of these photo-resistive cells have appeared on the market but they have been very low voltage cells capable of delivering only small amounts of energy in the output circuit, which energy is insufficient to control sturdy relays. Successive cells of any one type display wide variations in response.

The current output of a selenium cell at control voltage varies with the square of the illumination. The speed of response of a selenium cell is considerably slower than that of a photo-electric cell but the current which passes is much greater. However, unless cells with more constant characteristics are developed, which will make it possible to control sturdy relays without necessitating amplification, their usefulness will be very limited, since with these shortcomings they are inferior to photo-electric cells and amplifiers.

New cells of 110-volt rating which are able to deliver several watts in the output circuit are under development but as yet are still a laboratory device.

Photo-emissive, or photo-electric tubes, which are in the more important class, are used quite widely today and are very reliable. In these tubes the action of light causes emission of electrons from a sensitive surface known as the "cathode." The released electrons are drawn to a positively charged anode.

The photo-electric tube consists of an anode and a cathode sealed in a glass envelope. The alkali metals, lithium, sodium, potassium, rubidium and caesium have been used on the cathode to form the light sensitive surface. Caesium, however, is the more commonly used since its color sensitivity in the red end of the spectrum is higher than that of the other alkali metals. This is important since an ordinary incandescent lamp, which is generally

* Presented at the meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry, Appleton, Wis., October 10, 1933.
[1] Meter specialist, Westinghouse Electric and Mfg. Company, Chicago, Ill.

used as a light source, radiates maximum energy in the red region.

These photo-electric tubes are available in two different types, vacuum or gas-filled. The two types are structurally identical and in both types the light liberates electrons from the cathode or sensitive surface. If positive potential is applied to the anode and negative potential to the cathode, the light emitted negatively charged electrons will be attracted to the anode. In the vacuum type of tube this electron flow constitutes the entire current. In the gas filled tube, greater response is obtained due to gas amplification and secondary emission. When the applied voltage between the anode and cathode is greater than 30 volts, the electrons have sufficient velocity to knock out other electrons from the atoms of the gas in the tube, with which they collide. Thus the combination of these two factors permits the gas filled photo-electric tube to pass from 3.5 to 10 times as much current as the vacuum type of tube.

Although the current output of either the vacuum or gas filled tubes is considerably less than the photo-conductive, or photo-voltaic types, they have certain inherent characteristics which make them better suited for most applications. They are much more uniform, constant, long lived, rugged mechanically and their response is practically instantaneous. Temperature has no great effect on their sensitivity (below 158 deg. C.) and their "dark" impedance or resistance is practically infinite, thus eliminating "dark" current. In the vacuum type the response is an absolutely linear function of the amount of light falling upon the cathode, and in gas filled tubes while the output is not an exact linear function, it may for most purposes be considered substantially so.

This characteristic of proportional variation of output current to light intensity is a most important one, and most of its applications are based upon this.

The output current of a photo-electric tube is in the order of microamperes, and to be of use it must be amplified sufficiently in order to operate standard available equipment, such as indicating and recording meters, relays and other devices.

Some of the practical applications now in use in the paper industry are paper break recorder, register cutter control on wrapping machines and paper bag machines, Opacity meters for measuring the opacity of paper, Color matchers for matching the color of paper, and the stroboglow.

Other applications, while not directly connected with the paper industry are somewhat allied to it, and are as follows: smoke detector and recording, fire and flash detectors, apparatus for the sorting of materials, machine control, and electronic voltage regulators for both a.c. and d.c.

Still other applications are oil burner safety devices, counting, measurement of intense heat, airplane guidance and for determining hardness of steel in production without marring the finished product.

There are still other devices which control illumination in factories, sign lighting and street lighting. These devices act to turn on the various types of lighting when natural daylight illumination has decreased to a given value in the evening and will turn off the illumination when natural daylight has increased to a certain value in the morning.

Grid Glow Tubes

Throughout the ages man has constantly worked to devise means of controlling large amounts of power by the expenditure of as little energy as possible. As a result of this continuous development there is now in existence a variety of devices—relays of many types—by which this can be done with remarkable ease and a minimum of effort.

Most of these devices are characterized by moving mechanical parts, a fact which makes them unsuitable for use where great speed and accuracy are desired. It is evident then that mechanical or electro-mechanical relays are far from being the most desirable ones.

Gas filled tubes through which the passage of electricity is controlled by means of a grid, are relays which have no moving mechanical parts and are extremely fast in operation. They, too, can be made extremely sensitive. These tubes, then, are a more perfect means for power control.

One of the recent outstanding developments in electron tubes is the Westinghouse tube called "The Grid Glow Tube."

The grid glow tube is a grid controlled glow tube which consists essentially of a cylindrical aluminum cathode, an anode of nickel wire and a grid of nickel wire all mounted within a glass tube containing Neon gas at a low pressure.

The latest development by Westinghouse along these lines is the power grid-glow tube. The name "power grid-glow tube" applies to a newly developed line of tube relays and grid controlled rectifiers which were developed to meet the demand for devices of greater current carrying capacity and lower voltage drop than the grid-glow tube.

The development of the grid-glow tube gave the engineer a means of controlling large amounts of power with the expenditure of little energy.

The recent development of the power grid-glow tube makes it possible for him to do this with the minimum number of relays.

The power grid-glow tube can be operated by light through a photo-tube or by the use of small contacts that carry so little electrical energy that it can hardly be considered.

In conclusion it might be well to say a few words about the respective functions of the various electron tubes used in the paper as well as other industries.

Amplifying Tubes

While this paper has not mentioned amplifying tubes they were left out because most of us are familiar with the amplifying tube because of the fact that they have been used in radio circuits for quite some time.

In general there are three types of tubes used in the paper industry:

(1) The photo-tube which acts as both a contactless relay and variable resistance operated by light instead of mechanical devices. It has the desirable feature of operating control circuits without physical contact with the initiating objects; such as very light weight or very hot objects.

(2) The amplifier tube acts to build up the small voltages of the photo-tube to a value where they can be used to operate sturdy relays.

The amplifier also has the advantage of delivering a voltage or current proportional to the light impinged on the photo-tube. In other words the amplifier tube varies the current in its plate circuit with variations in light on the photo-tube.

(3) The grid-glow tube differs from the amplifier tube in that it acts as a trigger switch and delivers all or none of its rated capacity. In other words, the tube is either on or off.

This tube can be started by either the photo-tube or small contacts in series with the grid.

It also has the advantage of being able to handle relative large amount of power energy; which makes it possible to eliminate intermediate relays and allows for a control circuit of no moving mechanical parts.

The Place of Pulp Color Measurement in Paper Making—Present and Future*

By Lester C. Lewis[1]

Abstract

The methods for measuring reflectance of industrial products have been developed to such an extent within the past few years as to make possible:

1. Such measurement in place of more complex and less certain "color" measurement.

2. Research on reflectance in products and processes of a fundamental nature.

That reflectance measurement of pulp is productive of important results is shown by examples; considerable future usefulness is predicted.

Simple Adequate Method of Color Control is Reflectance Control

The time has come when color measurement of pulps should form a sound basis for the design and control of color in the *finished* paper to be made from them. This statement is made with the further contentions that: first, this has not been the fact in the past; that, secondly, it is equally possible to include in the general scheme for design and control exact color measurements on fillers, dyes, etc.

Why haven't we already settled the color question, established standard methods of measurement, standards for pulp in any *final* way? The answer is that we did not have the tools. We could not measure in a practicable way the reflectance of a sample which is the *only* thing we need control and should concern ourselves about controlling. For lack of such a tool we tried to get along with our eyes; that is, we worked with the "color" of a sample which depends on all nine of the factors of Fig. 1.

Color Versus Reflectance

Color is a sensation of the observer. The relative strength of excitation from two wave lengths seen in the sample is a product of the relative intensities in the light source 9, the relative reflectances of the sample 7, the relative sensitivities to excitation of the observer. This is all modified *very much* for the colors of pulp and paper by contrast with the surroundings (Factor 5); less but still noticeably by factors 2, 3, 4, 6 and 8.

Now, of course, we can talk about "color" with precision when we standardize all these nine factors in a useful way. That has been done by the International Commission on Illumination recently. But measurements on such a basis require at best a normal observer and considerable time, especially when he is fatigued. Add to that the fact that in the past either the choice of factors 1-9 has been unwise from the standpoint of correlation with ordinary use requirements in papers, or widely different in the instruments available.

Only one measurement, that of factor 7 in Fig. 1, the reflectance-wave length curve, is necessary to specify and control the color of any product. This simplification from the measurement of 9 factors simultaneously to that of 1 is the reason why one industry after another has fallen into line in using reflectance measurement—once this became practicable.

Development of Practicable (Photo-electric) Reflectometers

The brief story of this change is interesting. The writer well remembers making in 1922 an extensive comparison between incandescent and other lamps for "color" by the best available method. This was spectrophotometry with matching by eye. To compare two lamps was very fatiguing, took at least one hour, and the result was poor precision (1 to 2 per cent). Six years ago spectrophotometry with photo-electric cells (electric eyes) began to be regularly used by the Electrical Testing Laboratories of New York *(1)* who were doing probably as great a variety and volume of this kind of testing as anyone. This applies to light sources transmitted light or reflected. Instruments were developed for sale by several competent concerns and their use spread through the paint, dyestuff, textile and paper industries. W. B. Van Arsdel of the Brown Company gave a paper which is very fundamental for the paper industry, in February, 1931, before the Optical Society of America session on Industrial Color Standards *(2)*. Its conclusions are based on spectral reflectance curves obtained by the use of the new instruments.

One advantage of reflectance matching over "color" matching should be mentioned as it might often be important. This is that a reflectance match will be a true match (a match under all lights, artificial or daylight) whereas, visual matches often are not.

We have then, a sound practicable method for measuring reflectance versus wave length embodied in at least two finished instruments (G. E. and Razek-Mulder color analyzers), and several less finished, but less expensive, in the long run possibly more usable instruments. (I am particularly thinking of the G. E. color comparator which I have used and described last year in Holyoke.)

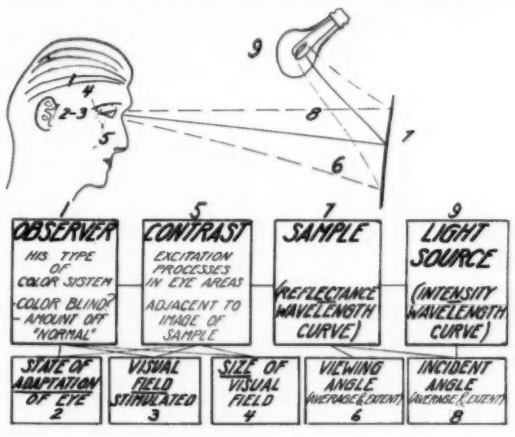


FIG. 1.

Dependence of color on nine variables, only one of which, reflectance, is a property of the object viewed.

RECEIVED September 28, 1933.

* Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Appleton, Wis., September 28, 1933.

[1] Member TAPPI, physicist, The Mead Corporation, Chillicothe, Ohio.

Paper and Pulp Reflectance Measurement is Simplified

And this brings us to a very interesting and pleasant point. The reflectance curve for pulps and white papers is rather simple. You see in Fig. 2 for 4 sulphite pulps of a wide range (those of Miss H. Kiely's inquiry) simply a gradual increase in the reflecting power as we go from the violet through the spectrum to the red. Contrast these curves with that for a pink sample heavily dyed with a common paper dye (Fig. 6). To specify this sample's color as precisely as we do that of a pulp, we require possibly five times the precision in the measurement of reflectance at a given wave length.

There are numerous conclusions to be drawn from this fact. One is that our measuring instruments do not need, for instance, *all* the refinements of those in the dyestuff industry. We have been measuring the reflectance at just 7 wave lengths instead of possibly 100-200 necessary in a great deal of color work. Another is that we may simplify the specification of a pulp color to say 2 figures—the height and average slope of the reflectance curve.

This happy fact is somewhat offset when we consider finished paper by the fact that very exact matches are insisted upon by our customers, because paper is a medium of very wide use, subject to long observation in reading (and because advertisers insist). A variety of uses has resulted in a wide range of demands for color here.

Place of Pulp Reflectometry in Papermaking

What do we ask of color measurement? What are our objectives? These I have set down in an organization chart for color measurement in papermaking (Fig. 3). First we think of the maintenance of standards over short and long periods of time. The latter can be done only by records, not by samples. More important perhaps is the need for establishing tolerances: the more so as these vary with the use requirement of the pulp. Roughly speaking, the tolerance (or allowable deviation from the standard) will be four times as great for a pulp forming only 25 per cent of a furnish as for the same pulp forming 100 per cent of a furnish. It is just as important that we establish the laws of combination of raw material colors into paper colors: answer such a question as, what is the color of a furnish 50 per cent sulphite and 50 per cent soda? Then, of course, we must establish measurements of dyeing effects, processing effects. The whole program is very direct and profitable when we set it against the tremendous economic importance of color in our industry.

So in the remainder of this paper, I should like to discuss two points: the first, the necessary polishing up of reflectance measurement methods before we standardize; the second, examples of what can be done individually and cooperatively with the methods.

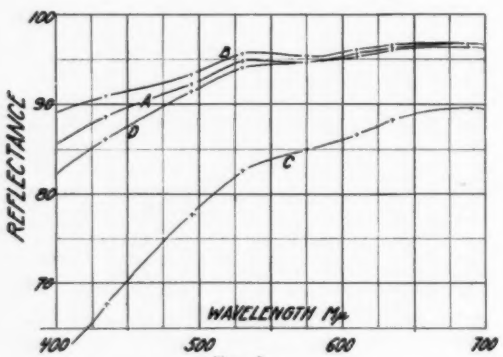


Fig. 2.

Reflectance curve for four pulps of Miss H. Kiely's inquiry—demonstrating simple type of curve.

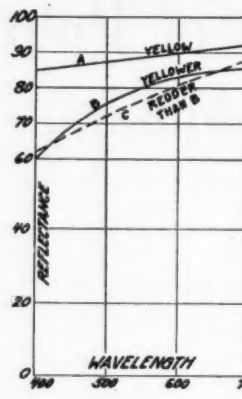


Fig. 4.

Simple relation between "color" of typical pulps and the reflectance curves.

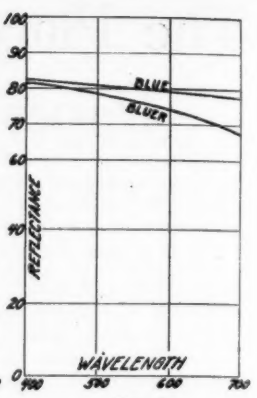


Fig. 5.

Simple relation between "color" of typical "white" papers and their reflectance curves.

Standardizing Reflectance Measurement

As to polishing up our methods: should we not first give a thought to unifying the work on optical properties of pulps? The opacity and reflectance are tied together by the fact that

Incident light = reflected light + transmitted light + absorbed light

It has recently been suggested by Maass *(3)* that paper should be specified by all three of the latter characteristics—and as for pulps, they merely are a simplified example of the same fact.

Secondly, we should agree on a few details of reflectance measurement. Fundamentally we should be guided by the following proposition: such a reflectance should be

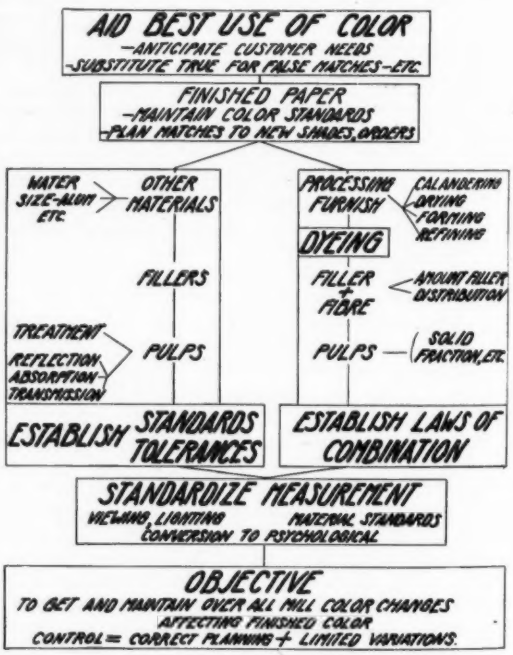


Fig. 3.

Desirable organization of "color" (better reflectance) measurement in papermaking.

measured as will best indicate the appearance of the *finished* sheet of paper. Whether this reflectance is the same one as enters under normal conditions as factor 7 in looking at a *pulp* sample is really secondary. However, preliminary work indicates that the recommended practice of the International Commission on Illumination will tie in very satisfactorily with all visual observation. This practice consists in measuring the reflectance at a small angle about a position 45 degrees from the perpendicular of a sample illuminated by a rather broad beam centered about that perpendicular.

Since there are now several instruments used in reflectance measurement, TAPPI can be of service by maintaining checks or prescribing methods of checking between them. The alternative use of color analyzers or of the "comparators" should be provided for, because the latter can be quicker and cheaper in operation. We can look forward to some simplification in both classes of instrument.

Material standards are important in the case of the comparators. The analyzers using magnesium carbonate require attention to eliminate variations in its reflectance. Ceramic or glass standards give considerable promise, not for visual matching but for comparator measurements.

A few words as to accuracy. It is easy to duplicate readings on the photo-electric instruments to 0.1 per cent (in fact Prof. Hardy of M. I. T. has attained .01 per cent or better without much trouble); but the standards to which we compare may easily (even in case of $MgCO_3$) be off by 0.5 to 1.0 per cent. When material standards are produced with a constancy to 0.1 per cent and particularly with a reflectance close to that of our samples—comparator methods will immediately become 5 to 10 times as precise. We should keep an open eye for such a development; and demand provisionally an accuracy of .25 per cent in reflectance at all points in the spectrum.

Certainly the preparation of pulp samples for reflectance measurement requires a wise standardization. Here again the guiding criterion should be maximum usefulness in papermaking.

Finally the use of the finished reflectance curves involves a new technique although a simple one. By way of introduction to it the three figures 4, 5 and 6 are used. Fig. 4 above shows a yellow pulp as having a reflectance increasing gradually (almost as a straight line) from violet through blue, green, yellow and orange to red. The steeper line represents a yellower pulp. The dotted line represents a noticeably redder pulp than the last mentioned.

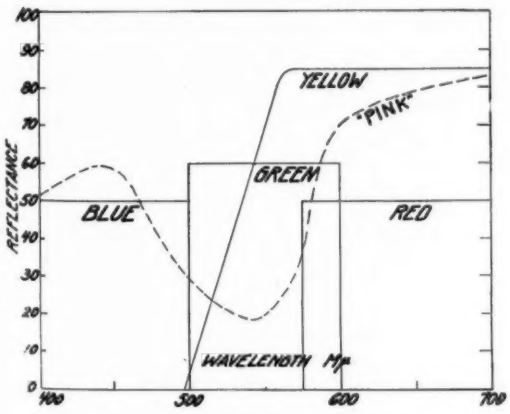


FIG. 6.
Reflectance curves for simplified "bright" colors.

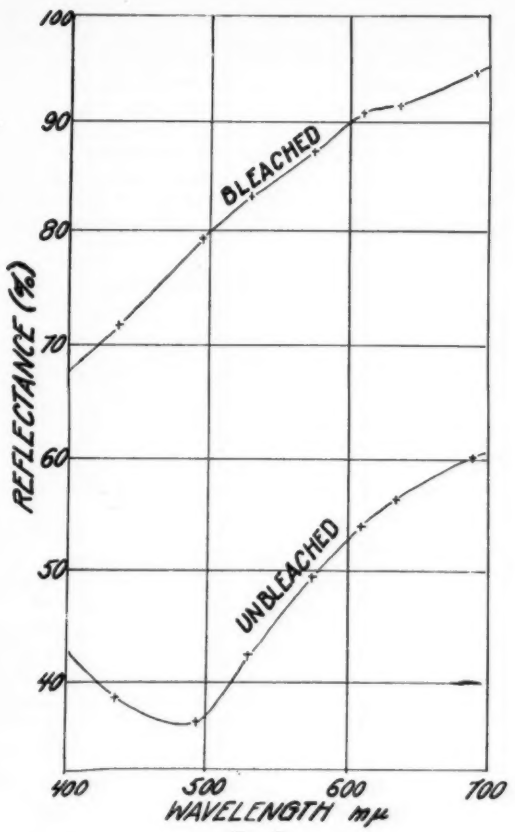


FIG. 7.
Reflectance curves of a pulp before and after bleaching.

Fig. 5 shows a blue paper sample decreasing gradually in reflectance through the spectrum of a similar diagram. The steeper line here represents the bluer sample.

Fig. 6 shows approximate forms of the curves for bright reds, yellows, greens and blues.

Any one of these curves may be converted into a statement of exactly what the sample looks like by the following procedure.

Three primary excitations of the eye (red, green and blue-violet) are computed for each sample. These form one method of color specification as distinct from reflect-

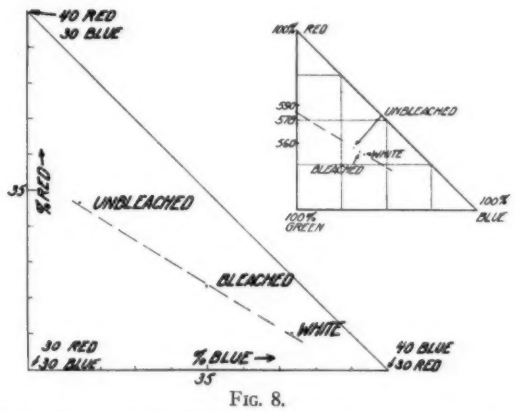


FIG. 8.
Description by "color" triangle deduced from reflectance curves of the colors of pulps in Fig. 7.

ance specification. A more familiar specification is obtained by plotting the excitations in a color triangle of which the corners are respectively 100 per cent red, green and blue excitation. Then the dominant wave length, purity, and brightness may be read from the position of the plotted point according to standard data. It would seem very wise here to use that system of excitations which was devised by an international commission *(6)* and now adopted by the Bureau of Standards. Computation forms and additional information may be obtained from the Bureau.

Examples of Useful Applications

Reflectance Change Due to Bleaching Pulp

Samples of a pulp ready for bleaching, and after laboratory bleaching, were analyzed on a 7 filter color comparator to give the reflectance curves of diagram 7. Outstanding are the facts that laboratory bleaching has (1) raised the reflectance at a representative point (about 550 mμ from 45 to 86 per cent as well as (2) decreased the amount of off grey in the sheet (measured by the average slope of the curves) from 36.5 to 24 units.

Color Specification From Reflectance

All this has not told us what the pulp's color change was but what its change was in "reflectance", the *only* property of the *pulp* which determines color. The color triangle of the next diagram (Fig. 8) is the result of computing and plotting visual excitations, which assume a standard daylight and a standard observer. The dominant wave lengths for the bleached and unbleached samples are the same but the bleached has approached much nearer white, its purity as a yellow color has decreased to, in fact, about 40 per cent of the unbleached value. In addition its brightness has risen from 45.0 to 85.6 per cent.

Specification of bleaching would appear often to be simple. There is a good deal of similarity between these facts and those found by roughly reversing the process with a dye; but there are significant differences.

TABLE I

	Unbleached	Bleached
Reflectance Curves (Fig. 7)		
550 mμ	45%	86%
Slope	36.5	24 units
Excitations (Int. Comm. Illum.)		
Red	.3465	.3235
Green	.339	.3275
Blue	.3145	.350
Brightness	45	85.6
Saturation	25%	10%
Dominant Wave length (mμ)	585	585

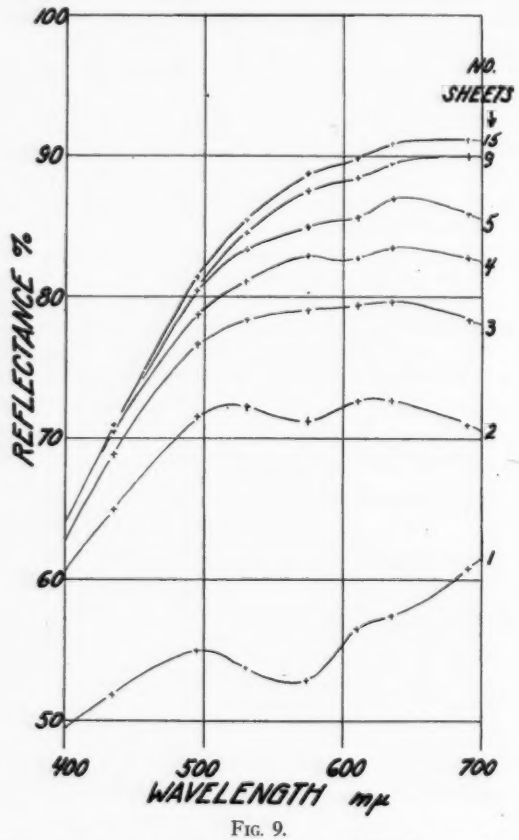


Fig. 9.
Reflectance curves on a single hand sheet of sulphite in seven increasing thicknesses.

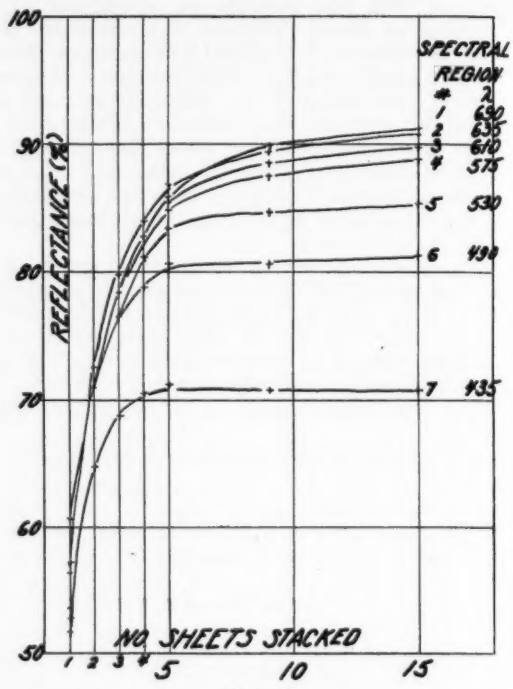


Fig. 10.
Reflectance at a single wavelength plotted versus number of sheets stacked (same data as of Fig. 9) for seven wavelengths.

Dependence of Reflectance on Pulp Sample Thickness

A 30 pound hand sheet of a sulphite pulp was cut into small pieces for measurement. The reflectances of 1, 2, 3, 4, 5, 9 and 15 thicknesses (in every case backed by black) were measured. These are plotted in Fig. 9. The reflectance for one of the seven measured wave lengths was then plotted against the number of thicknesses used. This repeated for each wave length gave the curves of Fig. 10. From the first set of curves it will be seen that the larger the number of sheets the higher was the overall reflectance and the yellower was the result (the slope of the curve was increased.) Since the curves of Fig. 10 rise fast and become flattened out with 5 to 10 sheets, a familiar type of equation was fitted to the data with considerable accuracy. This was

$$R = R_\infty - b\,(10)^{-ad}$$

R = Reflectance at any wavelength and thickness
R_∞ = Reflectance at that wavelength and such a great thickness that nothing is gained by increasing the thickness
b and a = constants
d = number of sheets used
The constants found were those of the following table:

TABLE II

Spectral Region — Filter No.	Principal Wavelength	R	b	a
1	690	91.2	47.8	.190
2	635	90.8	53.4	.224
3	610	89.8	50.2	.218
4	575	88.9	59.2	.246
5	530	85.4	55.2	.287
6	495	81.3	53.8	.350
7	435	70.8	59.6	.496

Now *a* is a constant closely related to the absorption coefficient of the pulp for light of the wave length concerned. The pulp is yellow because the blue light is absorbed much faster than (about 2.5 times as fast as) the red as they penetrate the sheet. Measurements of the opacity and of the color of heavier unit sheets (90 to 150 pounds for instance) corroborate the conclusions. To make this a little more vivid—suppose we consider a radiation "absorbed" when the reflectance is within 0.5 per cent of its final value we can calculate that the number of sheets necessary to absorb all the light from No. 1 spectral region is 10.4 as against 4.2 for the No. 7 region. Referring then to diagram 11 we may speak of a depth of penetration of roughly .011″ for radiation of wave length 435, but of .027 inch for radiation of wave length 690. It should be added that it makes little difference to our conclusions whether we consider a 1.0 per cent or a 0.1 per cent limit for the approach of our reflectance to the final value. In all paper-making considerations we have thicknesses much less than these to deal with. So, we must define the color of our pulp not only in terms of a thick layer, but also in terms of absorption coefficients. The color of a pulp made into any commercial weight sheet is different from the color in a pulp sample as the latter is always so thick as to have a higher reflectance toward the red end.

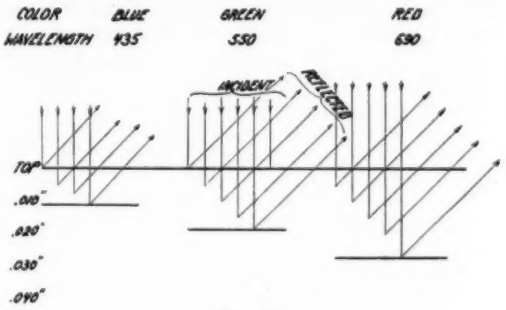


FIG. 11.
Depth of penetration of red, green, and blue illuminations with sulphite pulp of Fig. 9.

Conclusion

The facts have been developed that:

1—Difficulties with color measurement arise from involving too many variables.

2—We can narrow useful measurement down to that of just one variable, which is reflectance.

3—We then begin to be productive because relationships between raw material and finished color become direct and simple.

It may be concluded that measurement of pulp reflectance will be very useful to paper-making of the future—much more so than has been pulp "color" measurement in the past.

The writer wishes to acknowledge the encouragement of several members of the Mead Corporation staff in this study, and the able assistance of Kenneth N. Langley in operating the new instrument.

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Keeping Dirt Out of Paper*

By F. K. Becker[1]

It is perhaps unfortunate that we deal with a commodity of such color, texture and shape that the minutest imperfections become glaringly evident. That is why dirt, a common enemy to almost all industrial processes, becomes a major concern of paper makers, especially those making the finer grades.

Under the new conditions which seem likely to bring about changes arrived at the clearing away of grade and price confusion, buyers cannot help but become increasingly aware of the product itself. I believe that is evident to everyone here and that I, therefore, need spend no more time in arguing the importance and timeliness of the subject of keeping dirt out of paper.

The never-ending effort to produce a uniformly clean sheet of paper divides itself simply into two jobs: one, keeping dirt out of the mill by removing all possible sources of it, and two, keeping dirt out of the paper by doing everything possible to remove it from the stock as this goes through the system. The first calls for careful selection and handling of all raw materials as well as careful selection of handling equipment, such as piping, pumps, chests, etc., so as to introduce as little dirt as possible into the system. I do not want to minimize the importance of this defensive work against dirt, but it is to the problem of getting dirt out of the system, once it has gotten in, that I shall address myself to keep within the limits of the time allotted me and of my own experience which has been largely concentrated in this field.

Before discussing current practice it may be useful in making the situation clear to trace the progress in the art of making clean paper from its beginning. A hundred or so years ago there were no mechanical devices for separating dirt from paper. Lumps and knots were removed from the paper, not before but after it was made. The sheets were gone over by hand and imperfections removed in so far as possible by a pen-knife. To the best of our knowledge the first screen, a forerunner of the knocker type of flat screen, was invented and used in England about 1830.

Inward Flow Screens

The rotary screen dates back to about 1860 when Christian Wandel, a German, invented the original Wandel screen, an outward flow type. Inward flow screens soon followed and both types were commonly used abroad.

* Presented at the meeting of the New England Section of the Technical Association of the Pulp and Paper Industry, Holyoke, Mass., September 15, 1933.

[1] Member TAPPI, sales manager, Bird Machine Company, So. Walpole, Mass.

The foreign designs proved, however, to be unsuitable for the more severe requirements imposed by American mills. It was not until well into the present century that it was realized that a screen having all of the advantages of the rotary principle must be devised to meet the particular demands of American mills. In my opinion, perhaps because my own experience covers this period, more has been done to develop screens and methods of dirt removal from paper stock in the last 15 or 20 years than in all the previous history of paper making.

The inward flow rotary screen, the type in general use today, has overcome the troubles which a few years ago seemed to be inherent in screens. Because of its rotary construction it provides for automatic cleaning of the screen plates, troubles due to strings, lumps and slime are almost unknown, there are few breaks caused by the screens, and under most conditions the screens never cause a shut-down for washing up. Mechanically the inward flow rotary screen is at the point where operating cost is very low from every standpoint—power, plates, attention and repair.

The ability of the modern inward flow rotary screen to remove dirt depends upon the following simple and definite factors. First, screening area: picture this for purposes of simplicity as the total number of inches of screen slot length—the combined length of slot, so to speak—times the slot width, giving the total square inches of screening area. Naturally the greater total length of slots the greater the capacity, width for width, and other factors being the same, the finer the slot in width the cleaner the paper. Wider slots under given conditions mean increased dirt. There is no way of getting around that. The proper way to increase area is to increase the combined length of slots of the required width.

Another factor is the use of assisting force in getting the stock through the screen.

By this I mean not only the amount of the force but the method of applying it to the stock. Obviously it should not be applied against that part of the stock in which dirt is being concentrated for removal from the screen.

A third and very important factor in successful screening is the course of the stock through the screen, that is, the method of putting the unscreened stock into the screen, and of passing the stock through the screening member and out of the screen, providing definite means for concentration and rapid removal of tailings.

Another little understood factor, having more bearing on efficiency of dirt removal than is generally appreciated, is the velocity of stock through the slots. It is a common error to assume that the width of the slot is the sole or chief determining factor in removing the dirt and that whooping the stock through a given width by high pressure and consequently velocity will give satisfactory results. Common-sense hydraulics tells us that it can't be done. You can get more capacity this way but you will also get more dirt.

Finally, one very important thing to be noted about these various factors is that they are inter-dependent. For good screening all must be observed and taken into account, as variations in any one affect one or more of the others. For instance, reducing slot width is a good thing in itself but if at the same time you increase the force against the screen plate or the velocity through it you may do harm rather than good.

Illustrations of Increased Capacity

Let us lend point to these remarks by citing actual cases. I have in mind one mill where accurate tests were conducted recently to determine the actual effect of size of screen plate and varying screen output on dirt count. Fine plates were substituted for coarser plates with a reduction in screen capacity of 52 per cent. Dirt count was reduced 27 per cent.

A further reduction in capacity to 63 per cent resulted in a 50 per cent reduction in dirt count.

Reducing the capacity 13 per cent using the fine cut plates in both tests showed a reduction of 23 per cent in dirt count.

Here is another case. A sulphite bond mill had two of our No. 2 screens with .016 inch plates handling about 4,000 pounds an hour. They replaced these screens with two of the No. 3A size fitted with .010 inch plates. The dirt count was reduced 50 per cent.

Another mill making book paper likewise replaced two No. 2 screens with .014 inch plates with two 3A screens with .010 inch plates. With the old screens they were getting from 18 to 20 surface specks on a certain sheet. They are now getting 9 to 10, another 50 per cent reduction.

In still another mill an effort was made to get greater capacity out of the screen by changing from .010 to .014 inch plates. Results weren't satisfactory until they put in a larger screen with .010 inch plates. In another mill where the same thing was attempted, .012 inch plates being replaced with .016 inch plates, the mill reported an increase of roughly 50 per cent more dirt. They quickly put back the .012 inch plates.

All this is by way of emphasizing the fact that good screening means a proper combination of screen slot size and screen area, with due regard for all other factors, most particularly assisting force and velocity. There is no way around it and we have yet to see anyone beat the game. All things considered there is probably no other way of getting as great an improvement in paper quality for as little money as by providing finer cut screen plates with enough screening area to provide the proper capacity at the proper force.

Dirt Must Be Carried Away

Observation of screen performance in a number of mills also shows that an increase in screen capacity calls for a corresponding increase in auxiliary screen capacity. Tailings must be carried away in sufficient volume if the advantages of larger screening capacity and finer slots are not to be impaired. It is well to remember this principle in screening: that dirt should be taken out of the screen as fast as possible and at least as fast as it comes in. The longer you leave it in the screen the greater the concentration of dirt in unscreened stock and the more danger of its breaking up and getting through.

Centrifugal Separators

But today production of paper that is really clean calls for removal of dirt on the basis of its specific gravity as well as its size. Recognition of the need for this purifying paper stock has long existed; witness the attempts made to employ the force of gravity through the use of rifflers and, where metal particles were prevalent, through the use of magnetic separators. Separation of dirt by weight as well as by size has gone through a period of evolution even more rapid and more recent than that of screening. I refer, of course, to the application of centrifugal force by means of the machine which we call a Centrifiner.

Although centrifugal separation of dirt from paper stock is relatively new let me say that it involves certain factors which must be observed and carried out none the less definitely than those that we have just mentioned as applying to screening.

Cleaning area is again an important factor as it is in screening. It is not so easy to define, however. It is determined roughly by square inches of area of the mat of

stock formed in the machine, but with the qualification that of the two dimensions, diameter or length of circumference is much more important than height. For example, a centrifugal machine with a basket 40 inches in diameter and 28 inches high has a certain effective area, but the efficiency of this machine would not be doubled by making the same diameter of basket twice as high and, in fact, no greater efficiency is obtained by increasing the height beyond a certain point.

Velocity of the stock through the machine is again a factor. The efficiency of dirt removal in every centrifugal varies directly with the number of gallons put through the machine in a given time. If it is put through too fast the dirt will not get removed for lack of time in treatment; also the rate of travel can exceed the point where the dirt, if removed, can be retained on the mat in the machine. A velocity too high results in washing the dirt off the mat as fast as it is collected.

The thickness of the column of liquid in the machine is another factor that has to be watched. By this I mean the depth of the stream of stock, not the consistency of the stock. If this column of liquid is too deep a given particle of dirt has to pass too many fibers in order to reach the mat and be removed.

Consistency of stock is a factor too, regardless of the thickness of the column. If the stock is too heavy the dirt obviously cannot work through and out of the fibers as easily and rapidly as when the stock is less viscous.

As in the case of the screen the course of the stock through the centrifugal is important. Effective means must be provided for getting the stock through the machine while separating and collecting both heavy and light impurities.

I have already mentioned the mat of fibres which acts as a surface filter for catching and holding the impurities. The length of the cycle over which a centrifugal can be operated efficiently is determined by the surface of this mat. When a mat gets a hard, smooth or slippery coating, as it will from the impurities themselves after a long-enough operating period, or with clay, if this is present in the stock, it fast loses its dirt-retaining ability.

I think I do not need to point out that as conditions in the machine vary, dirt removal will vary. Changes of load and consistency are to be avoided. They are likely to cause plugging or a washing effect as I mentioned when speaking of velocity. Plugging is the result of too much deposit of fiber on the mat or in the passages of the machine preventing the stock from flowing properly. This can result in channeling so that the velocity through the smaller passages left open is too great.

Some idea of the efficiency of dirt removal that may be obtained by proper Centrifiner operation may be gathered from the following examples. In one fine paper mill, a 50 per cent rag ledger, 24 pound, showed a dirt count of 60 specks. After installation of Centrifiners the dirt count dropped to 7.4, an 87 per cent reduction. A 50 per cent rag blue print paper from the same mill had its dirt count reduced by 84 per cent. In another mill the percentage of No. 1 sheets was increased from 55 per cent to 97 per cent. In another from 75 to 85 per cent. In still another it was possible to reduce the furnish for each run by about 10 per cent because of the low percentage of rejects.

One interesting thing about the Centrifiner has been its surprising versatiity. It has been found practicable and valuable as applied to practically every grade of paper in which genuine cleanness is a factor of importance, either in selling or use. Hundreds of these machines are now at work removing dirt not only from ledgers, writings and bonds, but also high grade book papers, tissues, and a variety of specialty papers.

While the efficiency of the Centrifiner has proved to be very high, 85 to 90 per cent on all grades now being centrifined, I do not wish to leave with you the impression that it is a cure-all for dirt. It is simply an important and final part of the combination of equipment needed for real, lasting and uniform results—the combination of screen, auxiliary screen and Centrifiner. I could keep on talking for longer than you would care to listen on the advantages and the true economies of considering dirt removal as a unified job to be accomplished by the proper selection and operation of equipment best qualified for that particular job. I realize the difficulties. Few of us have a free hand to work out a completely ideal system; we shall no doubt continue to compromise as best we can. Nevertheless, I hope it may have been of some value to you to put before you this concept of dirt removal as a big and never-ending job and to show you the means of its accomplishment together with some of their limitations, possibilities and actual successes.

Economics of the Newsprint Industry

Die Versorgung der Tagespresse mit Zeitungsdruckpapier. (Supplying the Daily Press with Paper). Rudolf Löwenthal. Berlin-Wilmersdorf, Richard Mannheim Verlag, 1933. 69 pages.

The sub-title of this little book states that it is "an economic study of the newsprint industry, with special reference to Germany and the United States." The foreword states that the author has two purposes in mind: to illustrate the significance of the paper industry to the Press and to study the world economic problems of the newsprint paper industry.

After a two-page introduction, the author discusses the development of a standard quality of newsprint; in general in Germany this is 75 per cent mechanical and 25 per cent unbleached sulphite pulp; in the United States the ratio is 77.5 to 22.5. This is followed by a quantitative study of the consumption of newsprint and paper in general by the important countries of the world; newsprint consumption in 1929 is about 2.6 times that in 1913.

The second part deals with the development of production. The following figures show the increase in paper production: 1800, 10,000 tons; 1850, 100,000 tons; 1900. 8,000,000 tons; 1914, 10,000,000 tons; 1929, 16,000,000 tons (not including 23,100,000 tons of boards). The location of newsprint mills generally and of those in Germany and North America in particular is discussed. Chapter three deals with the optimum size of such mills; the high fixed costs have compelled the erection of large units, although to work economically such plants must be kept fully employed and suffer more in times of depression than small plants.

Part three deals with the markets for newsprint, figures being given for 1913 and 1929. Chapter two discusses the organization of these markets, discussing, among other things, such organizations as the Newsprint Institute of Canada, the Newsprint Service Bureau, and the tendency of newspapers to control or own mills, and, on the other hand, the tendency for mills to control papers. Chapter three discusses prices; tables give the prices in Germany, Sweden and Canada for 1913 and 1924-1929. It is stated that the German control by cartel and the American freedom of contract come to the same thing in the long run, for the economic actualities supersede the measures of artificial organization.

The last two chapters attempt to predict coming developments and sources of raw materials which may be available in the future. There is a bibliography of six and a half pages, most of the references being to German sources.

C. J. West.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Machinery

Method and Apparatus for Testing Loading Material Used in Paper Manufacturing. Henry A. Rothchild and John A. Limpert assignors to Paper Patents Co. U. S. pat. 1,899,774 (Feb. 28, 1933).—A weighed piece of fourdrinier wire is subjected for a given period to the frictional or wearing action of a volume of liquid containing a given weight of the loading material in suspension, and is then again weighed to determine the loss due to the wearing action of the loading material.—A. P.-C.

Barking Machine. Anders T. Tidblad. U. S. pat. 1,887,908 (Nov. 15, 1932).—A number of debarking units, consisting of toothed steel wheels and (or) steel brush wheels are mounted in a ring, which in turn is universally mounted in a rotatable drum.—A. P.-C.

Barking Machine. Per Foss. U. S. pat. 1,889,046 (Nov. 29, 1932).—The machine consists of a receptacle open at one or both ends and having a floor constructed of grid beams which can be moved perpendicularly or longitudinally in relation to one another.—A. P.-C.

Defiberizing Machine. William G. Hagmaier and Ernest C. Shaw assignors to Allis-Chalmers Manufacturing Co. U. S. pat. 1,887,728 (Nov. 15, 1932).—This is an improvement on Aicher and McMillan's U. S. pat. 1,476,032 (Dec. 4, 1923), covering machines of the general type wherein slabs or logs are fed longitudinally of their grain in contact with a number of rapidly revolving points or needles. The present invention provides special mounting and construction of the needles so as to increase their durability and reduce the cost of construction, and the rotor is formed to effectively support the needles while permitting convenient application and removal of the individual needles.—A. P.-C.

Method of and Means for Dressing Grindstones. Webster N. Baker and Ralph A. Masten assignors to International Paper Co. U. S. pat. 1,888,614 (Nov. 22, 1932).—A receptacle is associated with the burring tool and travels with it during the dressing operation. A water jet is directed against the stone near the point of contact of the tool and in a direction opposite to that of the movement of the stone at that point, so as to dislodge the material resulting from burring and deflect it into the receptacle.—A. P.-C.

Accumulator System. Jerry W. Stevens and William H. Kenety assignors to Chemipulp Process, Inc. U. S. pat. 1,885,561 (Nov. 1, 1932).—The invention provides automatic pressure-controlled means for regulating the diversion of relief material of several digesters from discharge into the accumulator to other means of disposal. It provides connecting several digesters to a single accumulator in such a way as to permit each digester to operate at any pressure, or at any stage in the cooking process, without interference by reason of a different condition prevailing in any other digester; and it permits of prolonging the period of direct discharge of relief material so that the contents of the accumulator are heated both by heat transfer and by direct absorption of the relief material.—A. P.-C.

Recovery of Relief Material. William H. Kenety assignor to Chemipulp Process, Inc. U. S. pat. 1,885,918 (Nov. 1, 1932).—The invention provides for two accumulators, one of which is mounted at a higher level than the other, the two accumulators being connected at their bottoms and the top of the bottom accumulator being connected with the digesters. By forcing the liquor from the top of the lower accumulator under the static head of the upper one, loss of gas is prevented in transferring the more highly saturated and heated liquor from the bottom accumulator to the digester.—A. P.-C.

Wood Pulp Digester with Internal Circulation Conduit. Einar Morterud. U. S. pat. 1,895,266 (Jan. 24, 1933).—The circulation pump is located inside the digester and close to the digester wall. The piping connected to the suction and pressure sides of the pump are located substantially at the axis of the digester.—A. P.-C.

Method of Controlling the Treatment of Vegetable Matter to Obtain Cellulose By Manipulation of the Vomit Pipes. Edmondson Spencer assignor of one-half to Edward C. Benthall. U. S. pat. 1,889,158 (Nov. 29, 1932).—In digesters which are fitted with internal vomit pipes, and more particularly in processes employing "cascade" digestion in which the digestion is carried out in stages or steps in a step-down pressure, valves are provided in the internal vomit pipes, which may be closed or opened at various stages in the cooking, as required, thus securing various advantages.—A. P.-C.

Device for Distributing Chips in Digesters. Bernard F. Smith assignor to Paper Patents Co. U. S. pat. 1,891,957 (Dec. 27, 1932).—A rotating conical member, formed with a downwardly and outwardly tapered chip-deflecting surface and presenting varying angles of inclination to its axis, is placed in the top opening of the digester, so that it is at the axis of the digester and just below the neck.—A. P.-C.

Digester Sieves. Torsten Samson assignor to Aktiebolaget Nordiska Armaturfabrikerna. U. S. pat. 1,889,731 (Nov. 29, 1932).—The sieve consists of a series of straight, horizontal, perforated tubes, connected end to end at an angle to one another, and mounted some distance from the digester wall, by means of brackets, so as to give perfect freedom for expansion and contraction.—A. P.-C.

Centrifugal Pulp Purifier. Lemuel V. Reese and George W. Johnson assignors to The American Laundry Machinery Co. U. S. pat. 1,887,955 (Nov. 15, 1932).—A skimming ring is provided for trapping the light impurities that form the inner stratum of the layer of pulp in the basket; and just above the skimming ring is a filtering ring through which the water accompanying the impurities can pass and return to the stream of cleaned stock while the impurities are held back.—A. P.-C.

Shredding Machine. Dell W. Sarway, John J. Grier and Allen J. Fritz assignors to Ryther and Pringle Co. U. S. pat. 1,891,245 (Dec. 20, 1932).—The shredding rotor consists of a series of toothed circular steel blades as-

sembled on a shaft; the blades are separated by means of spacing collars and are divided into two sets of different diameters, which are alternated along the length of the shaft. The blades are preferably machined to a slight angle from 90° to the axis of the shaft, thereby causing a "wabble" action in the blades. The invention also covers various features in the feeding mechanism, and provides for enclosing the shredder in a hood within which may be placed a spray or shower to reduce explosion hazards and loss of fine fibers.—A. P.-C.

Drive Shaft for Flat Screens. Sidney B. Gorbutt assignor to Electric Steel Foundry Co. U. S. pat. 1,885,254 (Nov. 1, 1932).—An articulated shaft is used, consisting of a number of sections of shafting flexibly joined together; means for operating the diaphragms are mounted on each section and on each side of the diaphragm-operating means anti-friction bearings are provided.—A. P.-C.

Doctor for Paper Machine Rolls. Frederick W. Lodding. U. S. pat. 1,892,214 (Dec. 27, 1932).—A thin flexible doctor blade is mounted in such a manner that it is firmly supported on both sides along its entire length. The mounting permits the blade to be moved transversely (at right angles to its scraping edge) to compensate for wear, the adjustment being easily carried out by means of an adjusting member at the end of the doctor-supporting structure, and being made without affecting the angle between the blade and the roll on which it acts. The blade can be renewed without removing the whole doctor-supporting structure.—A. P.-C.

Consistency Regulator. Harold D. Wells. U. S. pat. 1,890,799 (Dec. 13, 1932).—The invention provides a very simple construction. The regulator consists of a rectangular box divided into a number of compartments, with floats operating both the stock inlet and water inlet valves, so that regulation is effected very rapidly by acting on both the water and stock supplies. An anti-hunting device is provided. There is an indicator showing the consistency of the stock both before and after regulation. —A. P.-C.

Production of Genuine Watermark Papers Without Using Relief Molds. Friedrich von Heinrich assignor of one-half to National Bank of Hungary. U. S. pat. 1,901,049 (March 14, 1933).—Gradations or half tones are produced in watermarks by making a photographic reproduction of the design, decomposing the reproduction by a line screen, and reproducing the decomposed reproduction on a paper-forming surface with the water permeability at various places proportional to the light-tone values of the corresponding parts of the photographic reproduction.—A. P.-C.

Process and Equipment for Forming Sheets. William A. Darrah. U. S. pat. 1,885,334 (Nov. 1, 1932).—The stock is fed on to an endless wire, the path of which during the formation of the sheet is in the form of a circular loop, the sheet being on the inside of the circle. The wire travels at a speed of 2000 to 3000 feet a minute, or even higher, so that centrifugal force acts to maintain the wire in contact with the supporting rolls and at the same time to remove water from the sheet.—A. P.-C.

Fourdrinier Wire Seam. Nelson W. Webb assignor to Eastwood Wire Corp. U. S. pat. 1,891,788 (Dec. 20, 1932).—At each end of the cloth the warp wires disposed at one side of the end weft wire are arranged in slightly angular relation, being inclined in one direction at one end and in the other direction at the other end; this results in the alternate mesh openings adjacent the end weft wires being wider than the normal mesh openings in the body of the cloth, and permits of using a heavier lacing wire than usual and of threading it without the use of needles.—A. P.-C.

Method and Means for Delivering Stock to the Wire of Fourdrinier Machines. Earl E. Berry assignor to Beloit Iron Works. U. S. pat. 1,889,819 (Dec. 6, 1932). —The customary flow box and its accessory devices are eliminated entirely. The stock is fed directly from the screens into both ends of a rotating stock delivery cylinder, from which it passes outwardly through small delivery orifices and thence flows on to the wire.—A. P.-C.

Flow Rectifier for Paper Stock. Max Wenzel. U. S. pat. 1,890,634 (Dec. 13, 1932).—A rotating shaft carrying a number of smooth-surfaced disks is mounted across the head box, as closely as possible to the stock outlet, and a number of flow-obstructing elements (pins, plates, etc.) are positioned between the plates to restrict the flow of stock and thereby avoid the formation of uneven flow and turbulence.—A. P.-C.

Paper Making Process and Machine. Ernest Poirier assignor of 25-100th to John W. Stobie. U. S. pat. 1,893,678 (Jan. 10, 1933).—The head box is designed and constructed in such a way that variations in the consistency of the stock are utilized to control the rate of delivery of stock and maintain an approximately constant rate of delivery of dry fiber, notwithstanding variations in consistency.—A. P.-C.

Device for Preventing Grooving of Suction-Box Covers. Joseph A. White. assignor to The Moore and White Co. U. S. pat. 1,885,164 (Nov. 1, 1932).—The wire guiding mechanism is operated in such a manner as to shift the wire continuously back and forth over the guide roll and suction boxes.—A. P.-C.

Combined Light and Heavy Weight Paper Machine. Max Oberdorfer and Josef E. Ryberg. U. S. pat. 1,894,-472 (Jan. 17, 1933).—A top felt is provided which passes through the couch press and through the first press, but not through the second press.—A. P.-C.

Dandy Roll. John R. Sinclair. U. S. pat. 1,888,892 (Nov. 22, 1932).—The roll is provided with a ridged spiral member, formed with outwardly extending radial flanges, to receive and convey away any material that may pass inside the roll.—A. P.-C.

Drive for Paper Machine Press Rolls. Tom Harvey. U. S. pat. 1,892,573 (Dec. 27, 1932).—The invention provides a differential drive that supplies power equally to both rolls of a press and drives them at the same peripheral speed, one of the rolls being supported so that it can be moved bodily without affecting the drive; the parts of the gearing are supported in such a manner as to provide constant meshing of the gears. Provision is also made for differential drives for a number of presses and also for adjusting the speed of each individual press to obtain the proper draw.—A. P.-C.

Cylinder Machine for Making Deckle-Edged Paper. William A. N. Spencer and Wilbert A. Spencer. U. S. pat. 1,887,143 (Nov. 8, 1932).—The cylinder is made up of a number of hollow platens, separate unjoined sheets being formed on each of the platens. The inside of the platens are subjected to vacuum during forming of the sheets, and are then subjected to compressed air in order to detach the sheets and make them adhere to the felt.—A. P.-C.

Continuous Rotary Drum Filter Suitable for Use As a Cylinder Paper Machine. Gerald O. Hillier assignor to Oliver United Filters, Inc. U. S. pat. 1,892,306 (Dec. 27, 1932).—Distensible division strips are provided, that are pneumatically operated in co-ordination with the cycle of operation of the filter, so that strips may be made

ineffective during a portion of each cycle of operation. The invention is applicable also to outward-flow rotary drum filter or to rotary disc filters.—A. P.-C.

Cleaning Apparatus for Paper Machine Rolls. Henry T. Norman assignor to Great Northern Paper Co. U. S. pat. 1,889,838 (Dec. 6, 1932).—A rotary cleaning brush is mounted on the free end of a horizontal shaft at least as long as the rolls to be cleaned. The other end of the shaft is supported on a wheeled truck which also carries a motor for driving the shaft. On the free end of the shaft, near the cleaning brush, are mounted supporting means that bear on the roll to be cleaned.—A. P.-C.

Mechanism for Winding Paper into Rolls. Philip N. McCarthy and Paul Masson, assignors to Pope Appliance Corp. U. S. pat. 1,894,253 (Jan. 10, 1933).—The invention provides attachments to English type reels for initiating severance of the web when the roll has been completed and for automatically directing the free end to the other spindle on which it immediately starts being wound, with practically no waste.—A. P.-C.

Method and Means for Making Tight Rolls of Toilet or Creped Paper. Philip D. Parsons assignor to Scott Paper Co. U. S. pat. 1,894,281 (Jan. 17, 1933).—The invention provides a frictionally-driven pressure roll acting on the surface of the roll as it is being wound. —A. P.-C.

Method for Joining the Ends of Metal Cloths and Metal Webs, Especially for the Manufacture of Paper and Board. Rene Franck, Selestat. Ger. pat. 567,409 (Oct. 30, 1931).—Addition to Ger. pat. 513,743.—J. F. O.

Machine for the Cutting Up of Paper. Arnold Ritter, Plaüen. Ger. pat. 567,408 (May 23, 1931).—Machine consists of two rolls with saw teeth on the periphery. —J. F. O.

Arrangement for the Washing of Paper Treated with a Parchmentizing Liquid. Heinrich Nicolaus & Co. G.m.b.H., Kempten. Ger. pat. 567,410 (May 9, 1931).—Addition to Ger. pat. 520,663.—System of rolls and a carrying band for bringing the paper through the washing liquid.—J. F. O.

Arrangement for Cellulose Digesters. Einar Morterud, Torderoed, Norway. Czech. pat. 39,927. A system of circulation lines and pumps.—J. F. O.

Arrangement for Bottom Strainers in Pulp Digesters with Circulation Lines for the Cooking Liquor. Einar Morterud, Torderoed, Norway. Nor. pat. 51,189 (Aug. 19, 1930).—The bottom strainer is fastened to the digester at only one point, which thus allows the strainer to pendulate.—J. F. O.

Multiple Motor Drive for Paper Machines. Allgemeine Elektricitats Gesellschaft, Berlin. Swed. pat. 75,-649 (Nov. 28, 1930).—The speed of the working groups are regulated by a differential.—J. F. O.

Arrangement for Barking Drums Consisting of Several Sections. J. Strindlund, Tofte, Norway. Swed. pat. 75,658 (July 23, 1931).—J. F. O.

Device for Barking Drums. A. S. Thunes Mekaniske Verksted, Oslo. Nor. pat. 51,310 (May 16, 1931).—J. F. O.

Apparatus for Cutting Up Fiberous Materials into Small Pieces. Einar Carlsen, Skotfoss. Nor. pat. 51,-394 (Sept. 30, 1930).—J. F. O.

Arrangement for the Introduction of the Steam Inlet Pipe Through the Walls of a Sulphite Digester and Similar Objects with an Inner Lining of Masonery. E. Morterud, Torderoed, Norway. Nor. pat. 51,395 (Nov. 19, 1930).—J. F. O.

Arrangement for the Operation of Several Direct Current Motors Acting Together Mechanically, which Are Connected in Series with Auxiliary Machines on a General Source of Power. Allmanna Svenska Elektriska A.Bol. Vasteras, Sweden. Nor. pat. 51,295 (Nov. 7, 1930).—The auxiliary machines consists of direct current generators driven with a constant speed and with pure series excitation.—J. F. O.

Arrangement for the Combined Regulation of the Draw on Paper Machines. Allgemeine Elektricitats Gesellschaft, Berlin. Ger. pat. 567,345 (Aug. 16, 1925).—Addition to Ger. pat. 500,589.—J. F. O.

Electric Multiple Motor Drive, Especially for Paper Machines. Aktiengesellschaft Brown, Boveri & Cie, Baden. Ger. pat. 567,078 (Aug. 10, 1927).—J. F. O.

Arrangement for the Automatic Regulation of the Speed of the Feed Electric Motor, Especially for Continuous Wood Grinders. Siemens Schuckertwerke Akt. Ges., Berlin. Ger. pat. 566,922 (Aug. 3, 1926).—J. F. O.

Arrangement for Stock Centrifuge for Waste Waters Containing Fibers. R. Wendel, Stockholm. Swed. pat. 74,438 (May 25, 1927).—Addition to pat. 71,996.—J. F. O.

Process for the Regulation of the Stock Outlet on a Paper and Board Machine. Firma J. M. Voith, Heidenheim. Ger. pat. 566,557 (Sept. 12, 1931).—The principle of the invention is to hold the speed of the stock at the outlet constant.—J. F. O.

Flat Knotter. Otto Schuman, Heidenau. Ger. pat. 566,745 (March 3, 1930).—A piston operates a movable membran which is located under the knotter screen. —J. F. O.

Regulating Arrangement for the Combined Drive and Support of a Barking Drum. A. S. Thunes Mekaniske Verksted, Oslo. Nor. pat. 51,079 (June 23, 1931).—J. F. O.

Arrangement on Heat Exchange Apparatus for Heating Liquids Flowing Through Same. E. Morterud, Torderoed, Norway. Finn. pat. 14,308 (Nov. 19, 1930).—Means are provided for giving the liquids a turbulent motion as they pass through the heat exchange apparatus, and thus preventing the liquids from remaining in contact with the surface of the heat exchange for any length of time.—J. F. O.

Arrangement for Improving the Heat Action of Apparatus Heated with Indirect Steam. C. Rosenblad, Stockholm. Swed. pat. 74,255 (Feb. 24, 1930).—J. F. O.

Arrangement for the Feed of Sheets to the Lay Boy of a Fold Machine. N. G. A. Stromberg and G. W. Widlund, Stockholm. Swed. pat. 74,327 (Nov. 17, 1928). —J. F. O.

Mix Container for Pulp or Similar Materials. A. S. Thunes Mekaniske Verksted, Oslo. Ger. pat. 567,407 (Oct. 25, 1931).—Individual pumps are provided at different levels.—J. F. O.

Arrangement on Showers for Paper Machines and Similar Apparatus, for Producing a Spray of Water in a Continuous Hanging Sheet. A. S. Thunes Mekaniske Versted, Oslo. Nor. pat. 51,057 (Nov. 3, 1931).—J. F. O.

Device for Laying the Sheets on a Cutter. Jagenberg Werke A.G., Dusseldorf. Nor. pat. 51,445 (June 11, 1931).—J. F. O.

Process for the Treatment of Liquids Containing Fiberous Materials, (white water, waste water). Nils Pedersen and K. Sveen, Sarpsborg, Norway. Finn. pat. 14,313 (July 11, 1930).—The recovery of the fibers through flotation takes place in the presence of dissolved or dispersed protein substances.—J. F. O.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING DECEMBER 2, 1933

CIGARETTE PAPER

American Tobacco Co., Manhattan, Havre, 500 cs.; American Tobacco Co., Schodack, Bordeaux, 1000 cs.; Champagne Paper Corp., Schodack, St. Nazaire, 26 cs.

WALL PAPER

F. J. Emmerich, Georgic, Liverpool, 10 bls.; ——, Pr. Harding, Havre, 7 cs.

WALL BOARD

Treetex Corp., Nuolja, Sweden, 7191 bdls.

PAPER HANGINGS

W. H. S. Lloyd & Co., American Trader, London, 1 ble., 2 cs.

NEWS PRINT

Lunham & Reeve, City of Fairbury, Kotka, 366 rolls; Jay Madden Corp., City of Fairbury, Kotka, 299 rolls; Star Co., Markland, Liverpool N.S., 570 rolls; N. Y. Tribune, Inc., Markland, Liverpool, N.S., 1391 rolls; World Telegram, Markland, Liverpool, N.S., 558 rolls; B. J. Warren, Markland, Liverpool, N.S., 39 rolls; Ribbon & Ticker Paper Co., Markland, Liverpool, N.S., 24 rolls; Clinton Paper Corp., Markland, Liverpool, N.S., 148 rolls; Bank of Montreal, Humberarm, Cornerbrook, 3104 rolls; International Paper Co., Humberarm, Dalhousie, 5566 rolls; Jay Madden Corp., Gen. von Steuben, Bremen, 598 rolls; International Paper Co., Cornerbrook, Dalhousie, 5982 rolls; Natl Paper & Type Co., Stavangerfjord, Oslo, 26 rolls; Wilkinson Bros. Inc., Stavangerfjord, Oslo, 348 rolls; Clinton Paper Corp., Stavangerfjord, Oslo, 100 rolls; ———, Stavangerfjord, Oslo, 282 rolls; Perkins Goodwin & Co., A. Ballin, Hamburg, 435 rolls; ———, A. Ballin, Bremen, 97 rolls.

PRINTING PAPER

Ozalid Corp., Boschdyk, Rotterdam, 11 cs.; C. Steiner, A. Ballin, Bremen, 8 cs.; American Express Co., A. Ballin, Bremen, 3 cs.

WRAPPING PAPER

Walker Goulard Plehn Co., Pr. Harding, Hamburg, 668 rolls; F. C. Strype, Pennland, Antwerp, 14 cs., 2 rolls; H. Reeve Angel & Co. Inc., Pennland, Antwerp, 2 cs.; Japan Paper Co., Pennland, Antwerp, 2 cs.; Standard Products Corp., Pennland, Antwerp, 10 cs., 21 rolls; C. Steiner, A. Ballin, Hamburg, 5 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., American Trader, London, 13 cs.; M. W. Parsons, A. Ballin, Hamburg, 4 bls.

DRAWING PAPER

Devoe & Raynolds Co., American Trader, London, 5 cs.

SURFACE COATED PAPER

Globe Shipping Co., Gen. von Steuben, Bremen, 22 crates; Hensel, Bruckman & Lorbacher, Gen. von Steuben, Bremen, 1 cs.; Chas. Happel, Pr. Harding, Hamburg, 25 cs.; P. C. Zuhlke, Pennland, Antwerp, 19 cs.; Gevaert Co. of America, Pennland, Antwerp, 26 cs.; Globe Shipping Co., A. Ballin, Hamburg, 2 cs.; Globe Shipping Co., A. Ballin, Bremen, 46 crates, 31 cs.; Hensel Bruckman & Lorbacher, A. Ballin, Bremen, 3 cs.

BASIC PAPER

Globe Shipping Co., Gen. von Steuben, Bremen, 8 cs.; F. C. Strype, Gen. von Steuben, Bremen, 24 crates, 17 cs.

METAL COATED PAPER

K. Pauli Co., A. Ballin, Hamburg, 2 cs.; Globe Shipping Co., A. Ballin, Bremen, 15 cs.

COATED PAPER

Chas. Happel, Manhattan, Hamburg, 5 cs.; Chas. Happel, A. Ballin, Hamburg, 5 cs.

PHOTO PAPER

A. H. Niemayer, American Trader, London, 6 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Georgic, Liverpool, 24 cs.

DECALCOMANIAS

Sellers Transportation Co., A. Ballin, Hamburg, 4 cs.

TRANSFER PAPER

Hensel Bruckman & Lorbacher, A. Ballin, Hamburg, 3 cs.

TISSUE PAPER

F. C. Strype, Georgic, Liverpool, 9 cs.; B. F. Drakenfeld & Co., Georgic, Liverpool, 2 cs.

WRITING PAPER

American Express Co., American Trader, London, 2 cs.; A. W. Fenton, Inc., Berengaria, Southampton, 3 cs.

STENCIL PAPER

Frankel Carbon & Ribbon Manfg. Co., American Trader, London, 1 cs.

CARD BOARD

———, A. Ballin, Hamburg, 11 bls.

MISCELLANEOUS PAPER

Keuffel & Esser Co., Pr. Harding, Hamburg, 34 cs.; T. N. Fairbanks, American Trader, London, 1 cs.; Saunders & Co., Champlain, Havre, 5 cs.; Keller Dorian Paper Co., Champlain, Havre, 4 cs.; Keuffel & Esser Co., Manhattan, Hamburg, 39 cs.; American Express Co., A. Ballin, Hamburg, 3 cs.

RAGS, BAGGINGS, ETC.

A. W. Fenton, Inc., Coelleda, Manchester, 73 bls. rags; Chase National Bank, Coelleda, Manchester, 65 bls. rags; G. W. Millar & Co., Inc., Coelleda, Manchester, 16 bls. rags; National City Bank, Coelleda, Manchester, 45 bls. rags; ———, Coelleda, Manchester, 187 bls. cotton waste; Bank of N. Y. Trust Co., Caledonia, Glasgow, 57 bls. bagging; E. J. Keller Co. Inc., Exochorda, ———, 183 bls. bagging; E. J. Keller Co. Inc., Exochorda, ———, 41 bls. rags; ———, American Trader, London, 64 bls. paper stock; W. Steck & Co., Chifuku Maru, Hamburg, 58 bls. rags; Van Oppen & Co., Hakubasan Maru, Kobe, 100 bls. rags; Banco Coml Italiane Trust Co., Hakubasan Maru, Kobe, 147 bls. rags; Amtorg Trading Corp., Scanmail, Leningrad, 441 bls. waste; Amtorg Trading Corp., Scanmail, Leningrad, 1541 bls. rags; Van Oppen & Co., Man-

hattan, Hamburg, 70 bls. bagging; Chase National Bank, A. Ballin, Hamburg, 16 bls. rags.

GLUE, STOCK, ETC.

Darmstadt Scott & Courtney, Chifuku Maru, Hamburg, 47 bags glue stock; ———, Gen. von Steuben, Bremen, 100 bags hide glue; ———, A. Ballin, Bremen, 100 bags hide glue; Trans-atlantic Animal By-Products Co., Scanmail, Gdynia, 600 bags skin glue.

OLD ROPE

Banco Coml Italiane Trust Co., A. Ballin, Hamburg, 75 coils.

CASEIN

D. C. Andrews & Co., A. Ballin, Hamburg, 70 bags.

CHINA CLAY

L. A. Salomon & Bros., Georgic, Liverpool, 274 bags.

WOOD PULP

Irving Trust Co., Gen. von Steuben, Bremen, 96 bls. wood pulp; Lagerloef Trading Co., Minnequa, Kemi, 12600 bls. sulphite, 2116 tons; ———, Minnequa, Hernosand, 1410 bls. sulphite, 235 tons; ———, Minnequa, Hernosand, 2400 bls. sulphite, 400 tons; Perkins Goodwin & Co., Minnequa, Sundsvall, 600 bls. sulphite, 100 tons; Castle & Overton, Inc., Black Falcon, Rotterdam, 635 bls. wood pulp, 107 tons; Lagerloef Trading Co., Scanmail, Helsingfors, 937 bls. sulphite, 159 tons; Lagerloef Trading Co., Scanmail, Helsingfors, 125 bls. sulphate, 25 tons; Pagel Horton & Co. Inc., Nuolja, Sweden, 888 bls. sulphate; Pagel Horton & Co. Inc., Nuolja, Sweden, 1800 bls. sulphite; Perkins Goodwin & Co., Nuolja, Sweden, 459 bls. chemical pulp; Johansen Wales & Sparre, Inc., Nuolja, Sweden, 175 bls. sulphate; Price & Pierce, Ltd., Nuolja, Sweden, 900 bls. sulphite; Tradesman's Natl Bank Trust Co., Nuolja, Sweden, 1000 bls. sulphate; Stora Kopparberg Corp., Nuolja, Sweden, 500 bls. wood pulp; Bulkley Dunton & Co., Nuolja, ———, 750 bls. sulphate; ———, City of Fairbury, Hernosand, 1800 bls. sulphite, 300 tons; ———, City of Fairbury, Hernosand, 1410 bls. sulphate, 235 tons; Gottesman & Co. Inc., City of Fairbury, Iggesund, 500 bls. sulphite, 100 tons; Price & Pierce, Ltd., City of Fairbury, Wallvik, 900 bls. sulphite, 150 tons; Price & Pierce, Ltd., City of Fairbury, Wallvik, 1500 bls. mechanical, 300 tons; Castle & Overton, Inc., City of Fairbury, Wiborg, 2850 bls. wood pulp, 570 tons; J. Andersen & Co., Stavangerfjord, Sarpsborg, 480 bls. sulphite; J. Anderson & Co., Stavangerfjord, Oslo, 2665 bls. sulphite; E. J. Keller Co. Inc., A. Ballin, ———, 343 bls. wood pulp, 52 tons; Castle & Overton, Inc., A. Ballin, Hamburg, 1525 bls. wood pulp, 305 tons; Gottesman & Co. Inc., Kolsnaren, Sweden, 5400 bls. wood pulp.

WOOD PULP BOARDS

Heidelback Ickelheimer & Co., Black Falcon, Rotterdam, 700 bdls., 19 tons; Lagerloef Trading Co., City of Fairbury, Kotka, 33 bls., 102 rolls.

ALBANY IMPORTS

WEEK ENDING DECEMBER 2, 1933

Atterbury Bros. Inc., America, Drammen, 750 bls. chemical pulp; Perkins Goodwin & Co., America, Drammen, 125 bls. sulphite; Atterbury Bros. Inc., America, Tofte, 5400 bls. sulphite; Halifax Power & Pulp Co., Gard, Sheet Harbor, 9496 bls. wood pulp, 2124 tons; International Paper Co., Gard, Sr. Albans, N. F., 700 cords pulpwood; Bulkley Dunton & Co., Kolsnaren, ———, 2500 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING DECEMBER 2, 1933

Tradesmans Natl Bank Trust Co., Nuolja, Sweden, 2975 bls. wood pulp; Pagel Horton & Co. Inc., Nuolja, Sweden, 1381 bls. wood pulp; Stora Kopparberg Corp., Nuolja, Sweden, 4375 bls. wood pulp; Brown Bros. Harriman & Co., Nuolja, Sweden, 5340 bls. wood pulp; ———, Nuolja, Sweden, 1312 bls. wood pulp; Bulkley Dunton & Co., Nuolja, ———, 500 bls. wood pulp; Bulkley Dunton & Co., Hamm, ———, 1175 bls. wood pulp; Bulkley Dunton & Co., West Eldara, ———, 280 bls. wood pulp; International Paper Co., Cornerbrook, Dalhousie, 2604 rolls news print; M. Sone, Wiegand, Hamburg, 686 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING DECEMBER 2, 1933

Gottesman & Co. Inc., Ragnhildsholm, Sweden, 6650 bls. wood pulp; Bulkley Dunton & Co., Svaneholm, ———, 300 bls. wood pulp.

NEW LONDON IMPORTS

WEEK ENDING DECEMBER 2, 1933

Price & Pierce, Ltd., Nuolja, Sweden, 3000 bls. sulphate; Pagel Horton & Co. Inc., Nuolja, Sweden, 3321 bls. sulphate; Johaneson Wales & Sparre, Inc., Nuolja, Sweden, 3500 bls. sulphate.

PHILADELPHIA IMPORTS

WEEK ENDING DECEMBER 2, 1933

Lagerloef Trading Co., Minnequa, Kemi, 1000 bls. sulphite, 167 tons; Price & Pierce, Ltd., Minnequa, Drviken, 2100 bls. chemical, 350 tons; Perkins Goodwin & Co., Minnequa, Sundsvall, 1200 bls. sulphite, 200 tons; Perkins Goodwin & Co., Minneqa, Sundsvall, 1500 bls. sulphate, 250 tons; Irving Trust Co., Minnequa, Sundsvall, 750 bls. mechanical pulp, 125 tons; ———, Exochorda, Alexandria, 81 bls. rags; E. J. Keller Co. Inc., Schodack, ——, 183 bls. rags; Keene & Arkus, Schodack, Bordeaux, 79 bls. rags; Castle & Overton, Inc., Schodack, St. Nazaire, 107 bls. rags; Perkins Goodwin & Co., City of Fairbury, Hernosand, 1500 bls. mechanical pulp, 300 tons; Gottesman & Co. Inc., City of Fairbury, Iggesund, 2080 bls. sulphite, 416 tons; J. Andersen & Co., City of Fairbury, Iggesund, 2000 bls. sulphite, 250 tons; Bulkley Dunton & Co., City of Fairbury, ———, 250 bls. wood pulp, 50 tons; Price & Pierce, Ltd., City of Fairbury, Wallvik, 300 bls. sulphite, 50 tons; Price & Pierce, Ltd., City of Fairbury, Wallvik, 750 bls. mechanical, 150 tons; J. W. Hampton Jr., Co., City of Fairbury, Kotka, 152 rolls news print; Castle & Overton, Inc., City of Fairbury, Wiborg, 138 bls. wood pulp, 27 tons; Lagerloef Trading Co., City of Fairbury, Wiborg, 5280 bls. sulphite, 955 tons; Bulkley Dunton & Co., Hamm, ———, 200 bls. wood pulp.

WILMINGTON IMPORTS

WEEK ENDING DECEMBER 2, 1933

Price & Pierce, Ltd., Minnequa, Orviken, 9600 bls. chemical pulp, 1625 tons; Castle & Overton, Inc., City of Fairbury, Wiborg, 4289 bls. wood pulp, 857 tons; Price & Pierce, Ltd., City of Fairbury, Wallvik, 2000 bls. sulphite, 500 tons.

BALTIMORE IMPORTS

WEEK ENDING DECEMBER 2, 1933

Atterbury Bros. Inc., America, Drammen, 100 bls. sulphite; Perkins Goodwin & Co., America, Drammen, 500 bls. sulphite; Atterbury Bros. Inc., America, Tofte, 3925 bls. sulphite; The Borregaard Co. Inc., America, Tofte, 600 bls. sulphite; J. Andersen & Co., America, Greaker, 300 bls. sulphite; Gottesman & Co. Inc., America, Greaker, 3222 bls. sulphite; Congoleum Nairn Co., Schodack, Bordeaux, 848 bls. rags; Congoleum Nairn Co., Schodack, St. Nazaire, 152 bls. rags; Bulkley Dunton & Co., Bilderdyk, ———, 1240 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING DECEMBER 2, 1933

The Borregaard Co. Inc., America, Bamble, 3000 bls. sulphate; Atterbury Bros. Inc., America, Tofte, 450 bls. sulphite; J. Andersen & Co., America, Greaker, 2688 bls. sulphite; Gottesman & Co. Inc., Lagaholm, Sweden, 600 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING DECEMBER 2, 1933

———, Coelleda, Manchester, 77 bls. bagging; Champagne Paper Corp., Schodack, St. Nazaire, 1000 cs. cigarette paper.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, December 6, 1933.

During the past week trading in the local paper market was very light. Stocks held by the paper merchants are reported to be more than ample and there is little likelihood that mill demand will be livelier until the movement into consumption expands. Prices are generally steady and unchanged.

The news print paper market continues to show improvement. Advertising volume is expanding, with the result that the leading newspapers are printing more pages. Production is being maintained in sufficient volume to take care of current requirements. Prices remain unchanged.

Conditions in the paper board market are fairly satisfactory. Demand for box board is moderately active. Prices remain steady. The fine paper market is marking time at present. Tissues are moving in good volume. The coarse paper market is more stable than for some time past.

Mechanical Pulp

The ground wood pulp market is exhibiting a fairly strong undertone. Manufacturing operations at home and abroad are practically keyed to consumption and the statistical position of the industry is sound. The contract movement is well up to average. Prices are holding to schedule.

Chemical Pulp

Steadiness prevails in the chemical pulp market. While demand for the various domestic and imported grades has fallen off, the contract movement is fairly satisfactory for the time of year. Quotations are generally holding to formerly quoted levels, without difficulty.

Old Rope and Bagging

The position of the old rope market is practically unchanged. Demand for both domestic and imported old manila rope is slightly better. Small mixed rope is moderately active. Old rope quotations are unchanged. The bagging market is firmer, due mainly to the scarcity of foreign offerings.

Rags

Paper mill interest in the domestic rag market is more in evidence. Demand for new cotton rags is slightly better and there are a number of inquiries around for future account. No. 1 white shirt cuttings are holding up well. Roofing grades are moving in moderate volume. The imported rag market is dull, due to the uncertain foreign exchange situation.

Waste Paper

Offerings of the lower grades of waste paper are limited, with the exception of No. 1 mixed paper. No. 1 white news is firmer and is now quoted at from $1.20 to $1.25. Strictly overissue and strictly folded news are fairly steady. The higher grades of paper stock are moderately active including hard and soft white shavings.

Twine

Business in the local twine market is well sustained and the prevailing seasonal demand should continue until the turn of the year, at least. Supplies are moving into consumption in fairly heavy volume. Despite the usual keen competition quotations are generally steady to firm.

Boston Paper Market Fairly Active

BOSTON, Mass., December 4, 1933—Business with paper jobbers as a whole averaged fair during the last week. While some in the fine paper division characterized their business as much better, others noticed a slight improvement and some others sold only a small volume. Due to activities of salesmen, municipalities are showing an interest in diploma papers earlier in the season than usual. Some have already closed their orders for parchment stock. More cities are becoming interested in the leather diploma cover. A fair amount of wrapping paper moved during the week. November has not been a particularly good month, generally speaking, but the prospect appears good for an increased volume of sales. Business in box board was rather quiet, but values were sustained.

It was another quiet week in paper stock, with a great many of the paper mills closed, partly on account of the holiday. One large concern operated only one day and another only two days. Offers from buyers were rather low. Prices were unchanged throughout the list. The writing paper mills are reported to be supplied with rags for the rest of the year. At the office of one company, it was stated that nothing was being offered from abroad, although some material is arriving which was sold early

A moderate amount of business has been transacted in twine. It is said that prices should be higher, but that it is difficult to advance them when the supply exceeds the demand. In another week there may be a comment locally on the Associated Press despatch from Washington December 1, including the statement that "compensatory taxes on jute fabric, jute yarn and paper products that compete with similar cotton articles were ordered by Secretary Wallace today to equalize the 4.2 cents a pound processing tax on cotton."

Paper Mills Adopt Recovery Code

COHOES, N. Y., December 4, 1933—About 135 employees of the Mohawk Paper Makers Company, of this city and Waterford, are affected by the code adopted this week by the government for the paper mill industry. About fifty employees are employed at the Waterford branch while the remainder are connected with the local plant. About 560 persons connected with the paper industry in this section are affected and all have been working under a temporary code pending approval of the permanent code. Among the largest employers of labor in this section is the Behr-Manning Company, of Watervliet, which has about 425 persons on its staff. The Albia Paper Company, has adopted the code for its 50 employees.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, December 6, 1933.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Conditions in the bleaching powder market are fairly satisfactory. Contract orders are being booked in good volume for the forthcoming year. Bleaching powder is quoted at $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is fairly active. Domestic standard ground is quoted at 12½ cents and finely ground at 13½ cents per pound. Argentine standard ground is selling at 15½ cents and finely ground at 15¾ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is fairly persistent. Prices are holding to schedule. Solid caustic soda is quoted at from $2.60 to $3.10; while the flake and ground are selling at from $3.00 to $3.05 per 100 pounds, in large drums, at works.

CHINA CLAY.—The position of the china clay market is uncertain, due to foreign exchange fluctuations. Imported china clay is still quoted at from $12 to $17 per ton; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—Paper mill demand for chlorine is well sustained. The contract movement is well up to average for the season. Chlorine is still quoted at from $2.00 to $2.25 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is rather quiet. The grades of gum rosin used by the paper mills are quoted at from $4.90 to $4.95 per 280 pounds, in barrels, at works; while wood rosin is selling at $4.00 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Steadiness prevails in the salt cake market. Prices remain unaltered. Salt cake is quoted at from $14 to $14.50; chrome salt cake at from $13.50 to $14 per ton, at works, while imported salt cake is selling at from $14 to $14.50 per ton, on dock.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Contract shipments are moving in good volume. Prices are firm. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, 1.10; in bags, $1.40; and in barrels, $1.50.

STARCH.—Trading in the starch market is brisk. The contract movement is fairly heavy. Prices are holding to schedule. Special paper making starch is quoted at $2.67 per 100 pounds, in bags; and at $2.95 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is displaying strength. Demand is excellent for the season. Commercial grades are quoted at $1.35 to $1.50; while iron free is selling at $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Firmness prevails in the talc market. The contract movement is fairly heavy. Prices are stronger. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.50	@	—
S. & S. C. Litho.	5.75	@	—
M. F.	5.25	@	—
Coated and Enamel	6.15	@	9.30
Coated Litho	6.90	@	—
Tissues—Per Ream—			
White No. 1	.60	@	.80
White No. 2	.55	@	.70
Anti-Tarnish M. G. only	.75	@	.80
Colored	.80	@	1.00
Kraft	.75	@	.80
Manila	.65	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.11	@	—
No. 2	.10	@	—
Bleached, basis 20 lbs.	.13	@	—

(Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Side Runs	25.00	@	—
Kraft—			
No. 1 Domestic	4.75	@	5.00
No. 2 Domestic	3.87½	@	—
Southern	3.87½	@	—
Imported	Nominal		
Boards—per ton—			
News	45.00	@	50.00
Chip	42.50	@	47.50
Binders Boards	68.00	@	72.00
Kraft Liner	75.00	@	85.00
Standard 85 Test Jute Liner	50.00	@	55.00
Sgl. Mla. Ll. Chip	52.50	@	55.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	27.50	@	29.00
Dry	28.00	@	29.50

(F.o.b. Mill)

No. 1 Domestic and Canadian	24.00	@	28.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.80	@	3.00
Easy Bleaching	2.15	@	2.30
No. 1 strong unbleached	2.15	@	2.25
Mitscherlich Unbleached	2.15	@	2.25
No. 2 Strong unbleached	2.00	@	2.05
No. 1 Kraft	1.75	@	1.85
No. 2 Kraft	1.60	@	1.70
Sulphate—			
Bleached	2.75	@	3.25

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—			
Bleached	2.50	@	3.75
Easy Bleaching	2.05	@	2.15
News	1.90	@	2.00
Mitscherlich unbleached	2.25	@	2.50
Kraft (Domestic)	1.60	@	2.75
Soda Bleached	2.50	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.50	@	7.00
Silesias No. 1	4.25	@	4.50
New Unbleached	6.75	@	7.25
New Soft Blacks	3.00	@	3.25
Blue Overall	4.00	@	4.25
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	.65	@	.70
No. 2	.50	@	.60
No. 3	.40	@	.50
No. 4	.35	@	.40
No. 5A	.30	@	.35

Foreign Rags

New Rags

New Dark Cuttings	1.50	@	1.60
New Mixed Cuttings	1.60	@	1.70
New Light Silesias	3.50	@	3.75
Light Flannelettes	3.25	@	3.50
Unbleached Cuttings	5.75	@	6.00
New White Cuttings	5.50	@	6.00
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	3.75	@	4.00
No. 2 White Cotton	3.00	@	3.25
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.60	@	1.75
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.65	@	1.80
French Blue Linens	2.10	@	2.25
German Blue Linens	1.85	@	2.00
German Blue Cottons	1.50	@	1.60
Checks and Blues	1.30	@	1.40
Lindsay Garments	1.10	@	1.15
Dark Cottons	1.00	@	1.10
Old Shopperies	.85	@	.90
New Shopperies	.80	@	.85
French Blues	1.50	@	1.65

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.30	@	1.40
Domestic	1.25	@	1.35
Wool Tares, light	1.05	@	1.15
Wool Tares, heavy	1.05	@	1.15
Bright Bagging	1.00	@	1.10
Manila Rope—			
Foreign	2.50	@	2.75
Domestic	2.50	@	2.75
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	1.50	@	1.75
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

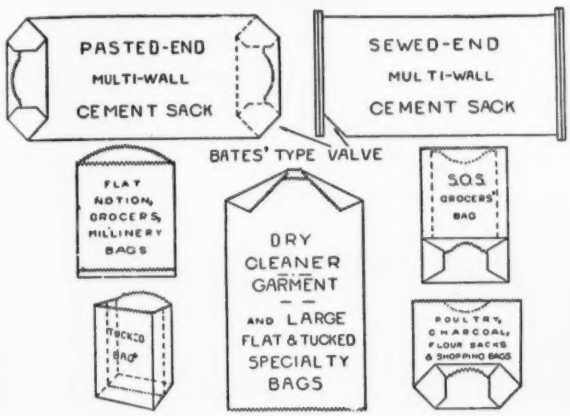
Shavings—			
White Envelope Cuttings	2.50	@	2.60
Ordinary Hard White No. 1	2.25	@	2.35
Hard White No. 2	2.10	@	2.20
Soft White No. 1	1.90	@	2.00
Flat Stock—			
Stitchless	.90	@	.95
Overissue Mag	.90	@	.95
Solid Flat Book	.70	@	.80
Crumpled No. 1	.60	@	.70
Solid Book Ledger	1.60	@	1.85
Ledger Stock	.95	@	1.05
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.50	@	1.60
New Cuttings	1.10	@	1.20
Extra No. 1 old	.75	@	.85
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.20	@	1.25
Strictly Overissue	.60	@	.65
Strictly Folded	.40	@	.50
No. 1 Mixed Paper	.25	@	.30

POTDEVIN

OVER 60 MODELS OF PAPER BAG

MACHINERY

FOR PLAIN OR PRINTED



ALSO MULTI-COLOR PRINTING PRESSES - COMPENSATORS BOTTOMERS - GLUING - PASTING - PAPER WAXING MACHINERY, ETC.

POTDEVIN MACHINE CO.

1223 38th STREET BROOKLYN, N. Y., U. S. A.

Dietz Towel Interfolding Machines
also

TOILET PAPER MACHINES

For making Toilet and Paper Towel Rolls
(With or without perforations)

AUTOMATIC TUBE MACHINES

For Making Wire-Stitched Toilet Tubes

Sanitary Crepe Towel Machines, Roll Tighteners, Slitting and Rewinding Machines, Drop Roll Slitting Machines, Photo Mount Beveling Machines, Rotary Card Cutting Machines, etc.
Correspondence solicited

DIETZ MACHINE WORKS

126-128 W. Fontaine Street
Cor. Waterloo St. (between Front & Second Sts.)
and below Diamond St.
Phila., Penna., U. S. A.

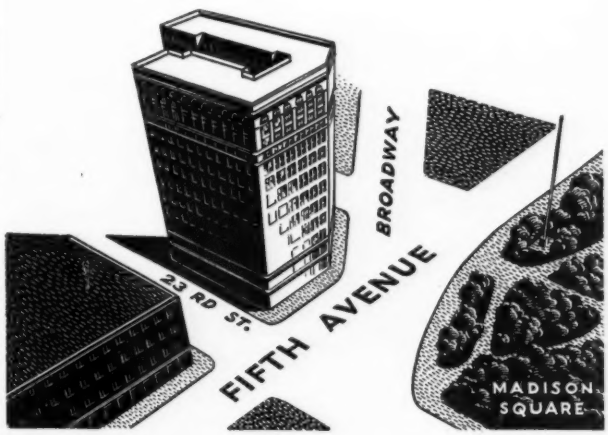
UNION SCREEN PLATE COMPANY
Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE SCREEN PLATES FOR FLAT SCREENS

Old Plates Reclosed and Re-cut to Accurate Gauge.
Rolled Phosphor Bronze and Copper Plates
for Rotary Screens

Sole Manufacturers of the
UNION-WITHAM SCREEN PLATE VAT AND FASTENER

A Strategic Location



SITUATED right in the heart of an international market, The Fifth Avenue Building offers to manufacturers an address that carries dignity and prestige. It is a strategic location—the center of business Manhattan.

Here, in this famous building, leaders in many and varied lines have their sales and executive offices. Here come buyers and merchants from the two Americas and from the other side of the world.

The Paper Trade is well represented. Among the tenants of this famous building are manufacturers of Paper and Pulp, Paper Mill Supplies and Machinery, Paper Box Board and Paper Products—as well as many makers of finished paper products such as stationery, greeting cards, playing cards, paper novelties and toys, etc.

If you are contemplating the acquisition of a New York address that will command the same respect in all quarters of the globe, by all means locate in the Fifth Avenue Building. It is but ten minutes from the Pennsylvania Station and but thirteen from Grand Central. Light and air unaffected by skyscrapers. Buses and surface cars pass the doors. Convenient to hotels. Subway entrances in building. Smart new restaurant on the ground floor. Information booth in lobby. Efficient elevator service. Why not let us show you through the building?

THE FIFTH AVENUE BUILDING

FIFTH AVENUE AND BROADWAY AT MADISON SQUARE, NEW YORK

"More than an office building"

Twines
(F. o. b. Mill)

Cotton—			
B. C. 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.15	@	.16
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.13¼	@	.14¼
3-ply	.14¼	@	.14¾
2-ply	.15¼	@	.15¾
Paper Makers Twine	.08¾	@	.10¾
Box Twine, 2-3 ply	.12¾	@	.13½
White Hemp	.12¼	@	.15¾
Java Sisal—			
No. 1 Basis	.11½	@	—
No. 2 Basis	.10½	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.13½	@	.15½
No. 2	.11½	@	.13½
Manila Twine	.24½	@	.29½

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.16	@	.50
Water Marked Sulphite Bond	.07½	@	.12
Baguette Bond	.09	@	.11
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¼
No. 1 Fibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Lag Boards	.04¼	@	.04¾
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	41.00	@	—
Sheets, open	46.00	@	51.00
Boards, per ton—			
Plain Chip	37.50	@	—
Solid News	43.50	@	—
Manila Lined Chip	47.50	@	—
Patent coated	55.00	@	—
Container Lined—			
85 Test	60.00	@	65.00
100 Test	60.00	@	70.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.70	@	1.80
No. 1 Hard White	1.40	@	1.50
No. 1 Soft White	1.20	@	1.30
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.50	@	.55
Overissue News	.60	@	.70
Old Newspapers—			
No. 1	.55	@	.60
Mixed Papers—			
No. 1	.30	@	.40
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07¼
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.10
Manila Sul., No. 1	.03	@	.06
Manila No. 2	.03	@	.05
No. 1 Kraft	.05¼	@	.06½
No. 2 Kraft	.03¾	@	.05
Southern Kraft	2.75	@	4.00
Common Bogus	.03	@	.04½

(Delivered Philadelphia)

News Print Rolls	46.00	@	55.00
Straw Board	40.00	@	45.00
News Board	37.00	@	45.00
Chip Board	40.00	@	45.00
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.40
No. 2 Hard White	2.10	@	2.15
No. 1 Soft White	2.05	@	2.10
No. 2 Soft White	1.15	@	1.25
No. 1 Mixed	.95	@	1.00
No. 2 Mixed	.75	@	.80
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.05	@	1.10
No. 1 Books, heavy	.90	@	1.00
No. 2 Books, light	.75	@	.85
No. 1 New Manila	1.20	@	1.50
No. 1 Old Manila	.85	@	.90
Print Manila	.75	@	.80
Container Manila	.75	@	85
Old Kraft	.90	@	1.05
Common Paper	.35	@	.40
No. 1 Mixed Paper	.35	@	.40
Straw Board Chip	.35	@	.40
Binders Board Chip	.35	@	.40
Corrugated Board	.50	@	.60
Overissue News	.55	@	.60
Old Newspapers	.35	@	.45

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06¼
Manila, Sul. No. 2	.03¼	@	.04½
No. 1 Kraft	.04¼	@	.05
No. 2 Kraft	.03½	@	.04¼

(F. o. b. Boston)

Southern Kraft	.03½	@	.04½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¼

(Delivered New England points)

News Print, rolls	44.50	@	—
Straw Board, rolls	.009	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	45.00	@	50.00
Chip Board	42.50	@	47.00
Chip Board (Creasing)	45.00	@	—
Single Manila Lined Chip	52.50	@	62.50
Single White, Patent Coated News Board—Bender	62.50	@	72.50
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.40	@	—
No. 1 Soft White	2.10	@	—
No. 1 Mixed	.80	@	.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	1.00	@	1.10
No. 1 Books, heavy	.85	@	.95
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.95	@	1.05
White Blank News	1.15	@	1.25
No. 1 Kraft	—	@	1.00
Manila	.75	@	.80
No. 1 Mixed Papers	.20	@	.25
Print Manila	.45	@	.50
Overissue News	.55	@	.60
Old Newspapers	.37½	@	.42½
Box Board Chips	.32½	@	.35
Corrugated Boxes	.27½	@	.35
Screening Wrappers	.60	@	.70

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	—	@	2.25
Domestic	—	@	2.50
Transmission Rope	1.50	@	—
Mixed Strings	—	@	.60
Jute Rope	1.00	@	1.15
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.00	@	1.10
Bleachery Burlap	3.00	@	3.25
No. 1 Scrap Burlap	1.40	@	—
Scrap Sisal	1.10	@	1.15
Scrap Sisal for shredding	1.15	@	1.30
Wool Tares, heavy	—	@	1.05
New Burlap Cuttings	1.15	@	1.25
Australian Wool Pouches	2.25	@	2.50
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	—	@	.75
Bagging No. 2	.50	@	.60

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.02	@	.02¼
New White No. 1	.06½	@	—
New White No. 2	.04½	@	.05
Silesias No. 1	.04	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.07	@	.07¼
Blue Cheviot	—	@	4.65
Fancy	—	@	.02¼
Washable	.02¼	@	—
Cottons—According to grades—			
Blue Overalls	—	@	.03¼
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03¼
O. D. Khaki	.03	@	.03¼
Corduroy	.01¼	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	—
White No. 2—			
Repacked	.01½	@	.01¾
Miscellaneous	.01½	@	.01¾
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	1.10	@	1.25
Miscellaneous	.85	@	.90
Black Stockings	2.25	@	2.50
Roofing Stock—			
No. 1	.60	@	.65
No. 2	.55	@	.60
No. 3	.35	@	.45

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.10	@	—
New White Shirt Cuttings	5.50	@	6.50
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.55	@	1.60
Old Linsey Garments	—	@	1.10

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.09¾	@	—
No. 2 Sulphite	.08	@	—
No. 1 Colored	.10¼	@	—
No. 2 Colored	.08½	@	.10¾
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.30	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	@	—
No. 3 S. C. (carloads)	6.30	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.22½	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	50.00	@	55.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.10
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.50
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.50
Printed Manilas	.70	@	—
Kraft	1.25	@	1.50
News and Scrap—			
Strictly Overissue	1.00	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.05¼	@	.05½
Fancy Shirt Cuttings	.02¼	@	.02½